

# WHAT DIGITAL Camera

MARCH  
2016

WHAT TO BUY



First  
look

## Nikon D500

20.9 million pixels • 153 AF points • 79-shot buffer • 4K UHD video

## Canon G9 X

Small on  
size, big  
on quality



Full  
test

## Animal magic

15 ways to get started  
with wildlife

Technique



## Zooming marvellous

Find your perfect bridge camera

Five  
of the  
best



## Zeiss 50mm & Panasonic 25mm

Two outstanding new lenses



Technique

## Breaking the rules...

For better pictures!

## The £2,000 difference

Leica vs Fuji – which wins?



## How to master flash

And get creative



Technique

## The UK's most comprehensive listings

Wondering about the latest gear? Find out how we rate 534 cameras and lenses

# D5500

24.2  
MEGAPIXEL

VARI-ANGLE  
TOUCH SCREEN

39  
FOCUS  
POINTS

BUILT-IN WIFI



## I AM READY TO IMPRESS

**I AM THE NIKON D5500.** Photographer Andrius Aleksandravičius expresses the full potential of his creativity – and so can you. Turn your ideas into great images with the advanced technology of the D5500. The new vari-angle touchscreen, built-in Wi-Fi\* and exceptionally portable and easy-to-handle body make it your smart companion for every project. With a 24.2 MP sensor, 39 focus points and an ISO range up to 25,600, the D5500 always gives you superior image quality. Get inspired and take your photography to the next level with the D5500.

\*Wi-Fi enabled smart device is required to share images.



©Andrius Aleksandravičius

**2YEAR**  
WARRANTY

For 2 year warranty on any camera and lens kit simply register your new Nikon within 30 days of purchase. Offer applies to UK & Republic of Ireland stock only. Call 0800 597 8472 or visit [www.nikon.co.uk/register](http://www.nikon.co.uk/register)



Nikon, Winner of the Which?  
Awards Best Photography Brand



Visit [europe-nikon.com/iamdifferent](http://europe-nikon.com/iamdifferent)

*At the heart of the image*



**p56** Animal magic**p25** Master Your Canon**p36** Breaking the rules

## Tests you can trust

To ensure the camera you buy doesn't disappoint, every camera that passes through the hands of *What Digital Camera*'s technical team is put through a series of tests. From high-spec DSLRs through to entry-level compacts, they are subjected to a series of rigorous tests in our lab, with results analysed by the very best industry software. This makes our reviews the most authoritative in the UK. We test for colour – different sensors and camera image processors can interpret colour differently. We then get down to the nitty-gritty of resolution, with our lab tests showing us exactly how much detail each camera can resolve. Then we look at Image Noise. Finally, we get out and shoot with every camera and lens in real-world conditions just as you will, to find out how they perform.



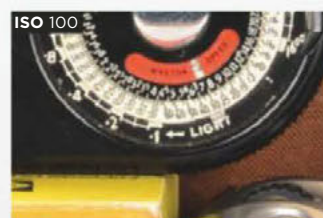
### COLOUR

Subjecting each camera to our colour chart test reveals any variation and differences in colour between Raw and JPEG file formats.



### RESOLUTION

Our resolution chart reveals exactly how much detail a sensor can resolve and it's measured in lines per picture height, abbreviated to l/ph.



### NOISE

The diorama is used to ascertain how image noise is handled through an ISO range. Some cameras produce cleaner results than others.

# In this issue

## 4 Incoming **ON THE COVER**

The latest products to hit the photography world

## 10 Things to try...

Photographic inspiration for the coming month

## 17 Essential guide: flash **ON THE COVER**

Get to grips with flash and expand your creativity

## 22 Portfolio

Photographer Karen McDonald reveals what inspires her

## 25 Master your Canon

Eliminate camera shake using image stabilisation

## 28 Subscribe!

Make sure you receive your copy of WDC every month

## 29 Master your Nikon

Shooting video with your Nikon DSLR

## 33 Master your Fuji

How the latest AF updates can help improve your pictures

## 36 Breaking the rules **ON THE COVER**

Avoid the clichés and get better photographs

## 42 Premium shoot-out **ON THE COVER**

We pit the Fuji X100T against the Leica Q (Typ 116)

## 48 Expert guide: Nikon D3300

The entry-level DSLR that packs a quality punch

## 52 Help

All the camera-buying advice you'll ever need

## 56 Animal magic **ON THE COVER**

Want to learn about wildlife photography? Look no further

## 63 Top 5 bridge compacts **ON THE COVER**

The best superzooms currently on the market

## 68 Accessories

The latest kit for you and your camera

## 70 Canon G9 X **ON THE COVER**

Small on size, big on quality

## 72 Zeiss Milvus 50mm f/1.4 **ON THE COVER**

At nearly £1,000, what does this lens have that others don't?

## 74 Panasonic Lumix G 25mm f/1.7

A fast Micro Four Thirds prime for those on a budget

## 76 Buying advice

Our comprehensive camera and lens listings

## 98 7 essentials

Improve your pictures for free!



dot touchscreen. This allows users to reposition the focus point across the frame by simply tapping the screen, and there's the option to enable a touch-shutter function for those who'd like to fire the shutter by tapping the rear display.

Although the pre-production samples we used didn't allow us to navigate the menu using the touchscreen, I discovered that image comments can be made in this way. The screen is the tilting type as opposed to being fully articulated, with buttons lining the left of the body in a similar fashion to that of the Nikon D7200.

Directly above the screen is the D500's optical viewfinder, which provides 100% coverage of the frame. The viewfinder has an impressive 1x magnification and offers dioptre adjustment from -2.0 to +1.0m.

As well as appealing to advanced stills photographers, Nikon has targeted videographers and those who'd like to record high-quality movies by equipping the D500 with 4K UHD video. The D500 can record 4K UHD (3,840x2,160) footage at 30p/25p/24p, with the option to also record 1,080/60p. Unlike the Nikon D5, which can only record a maximum of three minutes' 4K footage, the D500 can record for up to 29 minutes and 59 seconds.

The D500 also allows users to generate 4K UHD time-lapse

# Enter the D500

MICHAEL TOPHAM

Launched at the same time that Nikon announced its new flagship D5 FX-format DSLR, the D500 has a similar relationship to the D5 that the Nikon D300 once had to the Nikon D3. The D500 sits above the D7200 in Nikon's DX-format line-up and is designed to offer the best of both worlds, giving advanced enthusiasts and professionals the benefits of the DX-format, such as smaller form factor and crop factor, while also featuring advanced pro features. Let's take a closer look at the D500 in much more detail.

## Key features

The D500 features an all-new 20.9-million-pixel, CMOS, DX-format chip that has no optical low-pass filter. This is teamed up alongside Nikon's latest Expeed 5 image-processing engine that allows the D500 to shoot continuously at a blistering 10fps, with a 79-shot buffer when shooting 14-bit uncompressed Raw files.

Whereas the D300S has a rather conservative ISO range by today's standards, the D500 improves in this area by delivering a standard ISO sensitivity of 100-51,200 that's expandable to 50-1,640,000.

Claimed by Nikon to be its 'best enthusiast DSLR offering', the D500 supports this statement with a truly impressive autofocus system. It inherits the Multi-CAM 20K autofocus module from the Nikon D5, meaning it has the same configuration of 153 AF points that cover an extremely wide area of the frame. Out of the 153 AF points on offer, 99 of these are of the cross type. It's not only the number of points that impresses, either. The advanced autofocus system enables the D500 to focus down to an impressive -4EV with the central point, and down to -3EV with all other points.

Another feature that ties in with the new autofocus system is the D500's 3.2in, 2,359,000-

## HIGHLIGHTS

**SENSOR** 20.9MP, DX-format CMOS  
**ISO** 100-51,200 (expandable to ISO 50-1,640,000)  
**PROCESSOR** EXPEED 5  
**AUTOFOCUS** 153-point autofocus (99 cross type)  
**BURST** 10fps  
**VIDEO** 4K UHD movie recording  
**PRICE** £1729 (body only)







movies within the camera – a first for any Nikon DSLR. Both a headphone and a 3.5mm mic port feature at the side of the body, and users will find the movie-record button is conveniently located next to the on/off switch.

Elsewhere, the D500 introduces a new type of connectivity that Nikon has named SnapBridge. The idea of this technology is to offer a better link between the camera and mobile devices, and requires users to install a SnapBridge app that will be made available as a free download. As explained to us in an interview that we had with Nikon, one of the major benefits of SnapBridge is that it uses the power of Bluetooth technology to ensure you're always connected to the D500. Nikon has made sure users still have the opportunity to transfer large-size files using Wi-fi, and SnapBridge is one of the many new features we're looking forward to testing and finding out how well it works when our review sample arrives.

So what else is new? An MB-D17 battery grip (£429) will be made available for those who'd like to increase shooting stamina, and the camera will accept Nikon's EN-EL15 rechargeable Li-ion batteries. One slightly controversial idea is the arrangement of an XQD slot alongside an SD card slot. Nikon has opted for this ahead of twin SD card slots or a single slot for SD media and a single slot for CompactFlash.

According to Nikon, CompactFlash has now reached the end of what's possible in terms of speed, and XQD is a more future-proof solution in

the long term. Those looking at the D500 with great interest will want to bear in mind that adding a few XQD cards to your basket could quickly see the price escalate. The D500 will hit the shops in March, costing £1,729 (body only) or £2,479 with the AF-S 16-80mm f/2.8-4G VR ED.

## First Impressions

The arrival of the D500 has caught many by surprise, especially those who thought the next DX-format DSLR from Nikon might be the replacement for the entry-level D3300. With a good amount of time to get hands on and explore it, I can report that the top-plate is neatly laid out and has more of an advanced, professional feel than Nikon's other DX-format DSLRs. By repositioning the mode button to the left of the body, Nikon has created space for a dedicated ISO button directly behind the on/off

## “Nikon has created space for a dedicated ISO button behind the on/off switch”

switch. A large top-plate LCD panel features just like it did on the D300/D300S, although there's no built-in pop-up flash. To tie in with the launch of the D500 and D5, Nikon has also announced a new flagship SB-5000 Speedlight, which combines the power of the SB-910 in a smaller, more compact package.

Like the Nikon D5, the D500's autofocus system is one of the most impressive features. I found there was simply no hesitation or delay at acquiring focus in what can only best be described as unfavourable lighting conditions. The fact

that the D500 features such an advanced autofocus system means serious enthusiasts looking to progress from an entry-level model or, say, the D7200, now have the same focusing performance available to them as professionals using Nikon's FX-format full-frame flagship DSLR, the D5. I was impressed by the touchscreen's responsiveness to light touches when I experimented moving the AF point, and its 170° viewing angle makes it particularly good for shooting overhead.

Although the level of weather sealing and robustness isn't expected to be quite in the same league as the Nikon D5, the D500 serves as a tempting choice for Nikon users searching for a more advanced DX-format DSLR without having to make the big leap up to a full-frame model. I can see the Nikon D500 being an extremely popular DX-format DSLR with serious enthusiasts, and it's also likely to fall into the hands of some working pros who'd like to use a smaller and lighter model. The Nikon D500's crop factor (1.5x) and longer video-recording possibilities are other reasons why professionals might be tempted to take a closer look.

It's certainly been a long time coming, but it's fantastic to see that the successor to the popular D300/D300S is finally here. It's a camera that doesn't look or feel as if it'll disappoint.



First impressions of the D500 from our touch and try session are very encouraging



## 1 Vogue 100

**£19.00** [www.npg.org.uk](http://www.npg.org.uk)

Vogue 100: A Century of Style at the National Portrait Gallery showcases the range of photography commissioned by British *Vogue* since it was founded in 1916. Until 22 May.

## 2 Panasonic 100-400mm

**£1349** [www.panasonic.com/uk](http://www.panasonic.com/uk)

Panasonic has introduced the LEICA DG VARIO-ELMAR 100-400mm F4.0-6.3 ASPH to its LUMIX G range. The lens incorporates Power O.I.S. technology to keep handheld shots sharp across its vast focal range, which is equivalent to 200-800mm in 35mm terms.

## 3 Panasonic Lumix TZ100

**£549** [www.panasonic.com/uk](http://www.panasonic.com/uk)

Panasonic's large-sensor pocket compact boasts a 1in 20MP MOS sensor, 10x optical zoom (25-250mm) and a 0.2in, 1,166k-dot resolution EVF. Other key features include 4K video and a 3in, 1,040k-dot touchscreen LCD.

## 4 Nikon D5

**£5199** [www.nikon.co.uk](http://www.nikon.co.uk)

We've had to be patient, but Nikon's flagship FX-format DSLR has arrived. It looks like it will be a mightily impressive performer with a new 20.8MP full-frame sensor, 153-point AF system and continuous shooting up to 14fps.

## 5 Olloclip Studio

**£70** [www.olloclip.com](http://www.olloclip.com)

Designed for the iPhone 6/6s or 6/6s Plus, this new studio case includes an innovative rail-mounting system and is compatible with a series of mountable accessories. It also allows you to attach your phone to a tripod.

## 6 Olympus 300mm f/1.4

**£2199** [www.olympus.co.uk](http://www.olympus.co.uk)

Olympus has announced the M.ZUIKO DIGITAL ED 300mm 1:4.0 IS PRO for professional users of the Micro Four Thirds system. It tips the scales at 1270g and measures 227mm in length.



6



## 9 Fujifilm X-Pro2

£1349 [www.fujifilm.eu/uk](http://www.fujifilm.eu/uk)

Fujifilm's new flagship model in the X-Series has surfaced. The X-Pro2 combines a new 24MP X-Trans CMOS III sensor with the X processor pro engine. There are now 77 selectable AF points, it has a sensitivity range of ISO 200-12,800 (expandable to 100-51,200) and features a weather-resistant structure.

## 10 Nikon SB-5000

£499 [www.nikon.co.uk](http://www.nikon.co.uk)

Nikon has announced a new flagship Speedlight, which combines the power of the SB-910 in a smaller, more compact package.

## 11 Fujifilm X70

£549 [www.fujifilm.eu/uk](http://www.fujifilm.eu/uk)

This pocket-friendly compact boasts a 16.3MP APS-C size sensor and a super-slim 18.5mm f/2.8 wideangle lens. Available in black and silver, it becomes the first X-series model to offer touchscreen functionality.

## 12 IGPOTY

[www.igpoty.com](http://www.igpoty.com)

2015 saw some incredible photography from all over the world, with a record number of entries to the International Garden Photographer of the Year submitted from more than 50 countries.

8



9



7



10



11



## 7 Olympus PEN-F

£999 (BODY ONLY) [www.olympus.co.uk](http://www.olympus.co.uk)

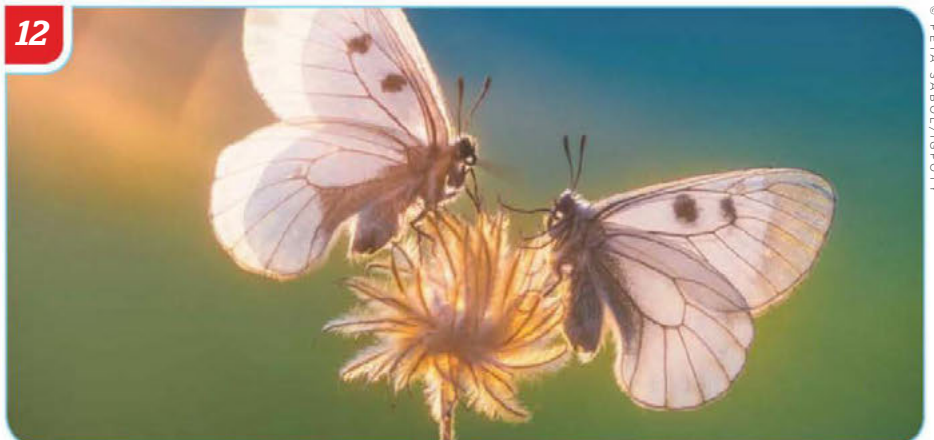
The new PEN-F is Olympus's most powerful PEN to date. It features a new 20MP sensor, 5-axis image stabilisation, 2.36-million-dot electronic viewfinder and shoots at up to 10fps. Designed to mimic the original F-series, it's also equipped with a vari-angle 3in screen.

## 8 Nikon Key Mission 360

£TBC [www.nikon.co.uk](http://www.nikon.co.uk)

The KeyMission 360 features two fisheye camera sensors in a back to back arrangement. 360 degree UHD 4K video is merged to create a virtual reality image.

12



© PETA SABOL/IGPOTY

# Motorola Moto X Force

MOTOROLA.CO.UK £499

Most phones these days are built of metal and glass, but that also makes them delicate things. Drop an iPhone 6S or Samsung Galaxy S6 on the floor and you'll likely pick up a phone that's scratched, dented and even cracked.

That's not the case with the Moto X Force. The latest flagship from Motorola is a tough beast, with a shatterproof screen that won't smash if you knock it off a table. We put it through its paces and this isn't just marketing spiel – it actually works.

It's a truly powerful phone, too, with a Snapdragon 810 processor paired with 3GB RAM and a

super-sharp quad-HD display. It managed to handle everything we threw at it with ease, from gaming to browsing to email. It's still running Android 5.1.1 Lollipop, but it should see a Marshmallow-flavoured update soon.

The Moto X Force's other killer feature is the frankly ridiculous battery life. The 3,760 mAh cell tucked under the ballistic nylon rear shell can easily get you through a normal day with 50% juice left and then make it through most of the next without needing a recharge. When you do need to charge, there's fast-charging and Qi wireless support, too.



If you're the clumsy sort, or just want a powerful and long-lasting Android phone, then the Moto X Force is a strong pick. **MP**



## Lenovo ThinkPad 10

LENOVO.COM/UK £429

If you're not a fan of Android tablets, how about one running Windows 10? Lenovo's latest slate is both thin and light, offers impressive ergonomics, good battery life and, most importantly, the ability to run all your typical Windows apps like Photoshop, Lightroom and more.

What really sets this apart from Android, and even iOS rivals, is the ability to choose your internal components more specifically. You can choose between 2GB or 4GB of RAM, 64GB or 128GB SSDs and whether or not you want 4G, there's also a load of connectivity options including USB-C for charging, USB 3.0, micro HDMI and microSD.

There's a strong 1920 x 1200 display, which is sharp with good viewing angles and an impressive maximum brightness. An add-on keyboard folio – sold separately – turn this into more of a laptop replacement and we managed to eke out nearly nine hours from a single charge. A very impressive stat. **MP**

## Google Pixel C

STORE.GOOGLE.COM £399

Up until this point, Android tablets have been more miss than hit. Even Google's Nexus line fell away. The search giant clearly thinks the same, because it has ditched the Nexus name for its latest slate.

Now taking the Pixel name from its Chrome OS running brother, the Pixel C is a gorgeous tablet. It's constructed from anodised aluminium, with machined speaker holes on one side and a light bar that glows with your battery status when you tap it.

There's a keyboard add-on, too. It'll set you back £119 but it turns the Pixel C into more of a Microsoft Surface competitor.

Another star of the show is the tablet's display. It's 10.2in, with a 2560 x 1800 resolution that reproduces photos and video with stunning brightness and accuracy. Google says the display covers all of the sRGB colour gamut, which is a nice touch.

Keeping everything ticking along is an Nvidia quad-core X1 processor that simply flies,



along with a Maxwell GPU and 3GB RAM. It's certainly a speedy machine, and the fact it runs a completely stock version – no nasty skins here – of Android 6.0.1 only helps this matter.

Yes, at £399 for the 32GB model and £119 for the keyboard, this is an expensive purchase. But it's powerful, pretty slick to look at, and a lot cheaper than an Apple iPad Pro. **MP**

## BOOK REVIEWS

### LARTIGUE: LIFE IN COLOUR

By Martine D'Astier and Martin Ravache

ABRAMS, £21.99

While many of us know him better for his black & white work, Jacques Henri Lartigue was more than open to experimenting with colour film and was endlessly fascinated by the results he could achieve with



the Autochrome process, and later Ektachrome. This volume is the first time the photographer's colour work has been collected together and the work offers a fresh perspective on a body of work we thought we previously knew well. There's

something rather strange about seeing many of Lartigue's famous friends, such as Pablo Picasso and Federico Fellini in glorious colour. This really is a great volume for photography history buffs. **OA**

### FRANCESCA WOODMAN: ON BEING AN ANGEL

Edited by Anna Tellgren, Walther König, £22.50

If you look through the portfolios of any graduating class from a photography course, you'll spot a number of influences that dominate students' images. One such prevalent photographer is Francesca Woodman, whose work has been consistently analysed. In the few intense years



before her premature death, she fearlessly explored the boundaries of sexuality, gender and body. She used herself and her friends as models, with locations further extending the narratives. It's these

ideas that you will find being repeated throughout the work of students across the globe, and that's no criticism. Woodman provides a powerful platform to explore not just one's identity as a photographer but also as a human being. **OA**



# SIGMA

The  
Photography  
Show

See us on stand F51

Ultra-high resolution and groundbreaking image quality. Introducing the new benchmark large-aperture standard lens for the high-megapixel era.



**A** Art

## 50mm F1.4 DG HSM

Petal type lens hood and padded case included.

Available for Sigma, Canon, Nikon and Sony AF cameras.

**Made in Japan**



### SIGMA WR FILTERS

Water Repellent Protector, Polariser and Ultra Violet filter. Sold separately.









## Try this... Play with depth of field

.....

We are taught that front-to-back sharpness is the be all and end all of good landscape photography, but there's nothing stopping you opening up your aperture to selectively blur a portion of your image, as Mark Bauer has done here. This technique is particularly effective when shooting at the long end of a telephoto lens.

### TOP TIP

There's a very simple way to visualise the effect that your aperture is having on your image – use the depth-of-field preview button. However, if you are using a very small aperture, the scene through the viewfinder may appear very dark. In such instances, live view is your friend. Alternatively, simply shoot the scene and check your camera's screen to ensure the image appears exactly as you would like it to.

*Canon EOS 5D Mark II, EF70-200mm f/4L USM at 200mm, 1/20sec @ f/4, ISO 100*

[www.markbauerphotography.com](http://www.markbauerphotography.com)

## Try this... Practise wideangle craft

Super-wideangle lenses are becoming increasingly popular, with more and more manufacturers introducing their own versions. But using them effectively and in a way that produces a striking image is more difficult than it may first appear. Photographer Adam Sherratt has provided us with the perfect example of how to approach a super-wide image. He has filled the foreground with plenty of interest – not least the bridge – and his raised viewpoint means that our eye cannot help but be led into the scene by the zigzag lines. The lighthouse in the middle distance is just big enough to avoid being lost. A long exposure brings out the dramatic sky.

## TOP TIP

Weather conditions and variations in light mean the landscape is always changing. Bear this in mind when visiting a location, and don't write it off if it doesn't quite come to life on your first visit. Returning on another day may offer opportunities you didn't spot previously.

*Sony Alpha 7R II, 14mm, 8 seconds @ f/8, ISO 100*

[www.adamsherratt.co.uk](http://www.adamsherratt.co.uk)







## Try this... Shapes that echo each other

Landscape photography is as much about the 'decisive moment' as any candid image, as this subtle and evocative picture by Jeremy Barrett demonstrates. Shot in Holme Dunes Nature Reserve in Norfolk, the marram grasses in the foreground are the main subject of the image. However, try to imagine it with a blank sky – or even a very dramatic one. It wouldn't be the same at all. The wispy clouds captured here echo the shapes of the grasses perfectly. You can almost hear the sussuration. This image won the Adult Classic View category of the 2015 Take a View Landscape Photographer of the Year competition. A worthy winner.

## TOP TIP

Don't look upon black & white photography as the poor cousin of colour. Try heading out with your camera with the express aim of converting your images to monochrome later. You'll start to view the world in tones rather than colours, and you'll find it will influence what you choose to shoot.

*Nikon D7100, 24mm f/3.5, six seconds @ f/7.1, ISO 100*  
[www.vuzephotography.co.uk](http://www.vuzephotography.co.uk)





# hello spring

get outside and shoot!



**Canon 70D**  
**18-135mm lens**  
**£929**

**Canon G5X**  
**1" sensor, f/1.8-2.8**  
**£579**



**Castle  
Cameras** 



**Canon**

**PRO**  
PARTNER

[www.castlecameras.co.uk](http://www.castlecameras.co.uk)

prices correct as of 20/01/16  
prices may change, see website for current details



QUOTE WDC3 FOR  
AN EXTRA £10  
ON TOP OF OUR  
VALUATION

# cameraWORLD

*The Part-Exchange Specialists*

## Do you have any unwanted photographic equipment?

### WE BUY MORE...

...Most Digital SLR's, Mirrorless cameras, Advanced Compacts, Classic 35mm SLR's, Vintage cameras, Medium Format cameras, AF & MF lenses, high quality camera bags, tripods & many accessories!

### • 35mm FILM SLR CAMERAS URGENTLY REQUIRED •

It really is as easy as... **1-2-3!**



**1. GET IN TOUCH**

Give us a call and have a chat.  
Or fill out our simple form at  
[www.cameraworld.co.uk/used](http://www.cameraworld.co.uk/used)



**2. GET COLLECTED**

Pop it in the post or we can  
collect it when convenient\*  
\*Dependant on value.



**3. GET PAID**

Take advantage of one of our  
super Trade-Up Offers, or just  
take the money and **ENJOY!**



**Dale Hawkins**

Used Equipment Manager  
Over 30 years experience!

DIRECT LINE:

**0207 467 9912**

EMAIL:

**[dale@cameraworld.co.uk](mailto:dale@cameraworld.co.uk)**

**COMMISSION SALES:**

We can also sell your equipment for you for **only 15%**  
commission. Please call Dale for more information.

## OLYMPUS pen-F



**A Mirrorless Masterpiece!**  
Olympus have designed a modern classic  
that will re-inspire you and rekindle  
your passion for photography.

**£50 Trade In Bonus**

**+FREE** Lowepro Adventura  
SH120 II

WORTH  
£28

We'll add £50 to our usual high offer when  
you part-exchange any working camera\*  
\*Must be fully working, excellent condition and complete

Body  
**£999**

17mm Kit  
**£1,099**

14-42mm Kit  
**£1,199**

**LONDON** 020 7636 5005

14 Wells Street (off Oxford Street), London W1T 3PB

**CHELMSFORD** 01245 255510

High Chelmer Shopping Centre, Chelmsford, Essex CM1 1XB

Goods and delivery services subject to stock and availability. Prices subject to change.  
Pictures are for illustration purposes only. All prices include VAT @ 20%. E. & O.E.

[www.cameraworld.co.uk/used](http://www.cameraworld.co.uk/used)



# Quick as a flash



Flash is an essential skill to master if you want to broaden your repertoire and take professional-looking pictures. We look at the main types of flash and how they can be used to enhance your photography

WORDS • AUDLEY JARVIS

The word 'photography' is actually an amalgamation of two ancient Greek words: *photos*, which translates as 'light', and *graphos*, which translates as 'writing'. The literal meaning of 'photography' then, can be taken as 'writing with light'. Despite advances in technology and the transition from film to digital, this same basic concept applies just as much as it always has. To be a successful photographer and make great images one of the most important things you need to master is control over the light.

In a perfect photographer's world the ambient light would always behave exactly as you want, switching from hard and contrasty to soft and diffused at the flick of an imaginary switch. Of course in the real world this isn't even

remotely possible and to become a skilled photographer you need to be able to operate in a range of conditions, including when the ambient light is too bright (i.e. in the midday sun) or in too short supply (i.e. when shooting at night, or in dimly lit interiors). In both of these cases being able to create your own light and shape it to your own particular requirements using flash often makes the difference between an average image and a great one. This is especially true when photographing people, but applies equally to inanimate subjects too.

Flash is often – and rightly – considered something of a minefield, and certainly it takes a lot of time, experimentation and practice to get things right. However, once things click into place you'll discover that flash is

one of the most flexible, creative and fun photographic techniques you can call upon. Eventually, once you've mastered the art you'll be able to instinctively see how you can turn potentially good images into great ones by painting your own light into the scene. And before anyone accuses us of getting carried away remember that flash doesn't have to be overpowering or in-your-face either; indeed the best flash photographers are those who've learned how to seamlessly and subtly blend the ambient light with man-made light to create something truly unique.

Over the next few pages we'll take a closer look at the types of flashgun that are available to buy, and highlight some of the key features and flash technologies to be aware of. We've even

Being able to control your flash often makes the difference between a good photograph and a great one

■ cherry-picked a number of flashguns and flash accessories for you to perfect your flash skills with.

## Types of flash

Broadly speaking, there are three different types of flash: the tiny pop-up units that are built into most cameras; independent hotshoe flashguns (sometimes also called speedlights) that attach directly to your camera via its hotshoe or accessory plate; and the larger flash heads that require mains power or their own bespoke battery packs, and which are generally designed for use in a studio environment, or by professionals shooting on location. In this guide we'll focus primarily on the first two types as these are what the vast majority of photographers use on a daily basis. While flash heads and studio kits provide much more power than pop-up units or flashguns, they are also large and quite cumbersome. In any case a decent hotshoe flashgun will generally prove more than ample in most situations.

While built-in and pop-up flash units are fine for taking snapshots and candids with, if you want to get creative with flash then you'll need to invest in a hotshoe-mounted flashgun. Not only will a dedicated flashgun unit provide more power than your camera's pop-up flash, you will also find it to be far more flexible, allowing you to control, direct and shape the light it emits to your own specific requirements.

Basic flashguns can be bought from as little as £70 if you shop around, while at the other end of the scale prices for more advanced and flagship models extend up to £500 and beyond. If you're just starting out you really don't need to spend that much though. If you can set your budget to around £150-300, then you'll have no trouble finding a powerful, feature-rich flashgun that'll offer enough power and flexibility for you to develop your skills with. You'll need to ensure that it's compatible with your camera, of course, otherwise you run a risk of damaging the electronics inside the flash unit or your camera.

All of the major manufacturers offer their own flashgun ranges, in addition to which a number of reputable third-party specialists such as Metz, Nissin and Sunpak manufacture devices that are

## GUIDE NUMBERS

Generally speaking the more expensive a flashgun is, the bigger and more powerful it will be. To help compare the power output of individual devices, all manufacturers supply what's called a Guide Number for all of their models, which is usually abbreviated to GN. In the simplest possible terms, the higher the GN figure the more powerful the flash will be. The GN is calculated by multiplying the distance between the flash and the subject it's illuminating by the f-stop used to produce an optimally exposed image of that subject. This can be simplified to:  $GN = \text{distance} \times f\text{-stop}$ . Most manufacturers calculate their GN figures using a standard test set-up of ISO 100 with the flashgun's internal zoom set to 105mm, the notable exception being Nikon, which supplies figures using the 35mm flash head setting.



individually tailored to work with all the main camera brands.

Simple things to look out for when comparing models include overall build quality and resistance to dust and moisture. Can the head be tilted or swivelled so that you can bounce the light it emits off walls and ceilings for softer, more diffused light? Also, check to see if it comes equipped with a motorised zoom head as this enables the flash element to move forward or backwards so that it can match the focal length of your lens for more accurate results. Most mid-range flashguns tend to provide a zoom range of 24-105mm, although a few models extend a bit further. Since just about all flashguns rely on four AA batteries for their power it's worth investing in a set of rechargeable batteries and a charger, as this will save you a lot of money in the long run. Nickel-metal Hydride (NiMH) batteries tend to be the preferred choice, with Panasonic's Eneloop brand a popular option.

Once attached to your camera all flashguns employ some form of TTL (Through The Lens) metering in order to calculate the correct amount of light that needs to be supplied. The naming conventions used to describe this technology vary between manufacturers (Nikon calls it i-TTL whereas Canon calls it E-TTL), but ultimately all forms of TTL flash metering are fully automatic and rely on your flashgun communicating with your camera to determine the correct power settings. If, for any reason, the TTL

## “It's worth investing in a decent flashgun to develop and refine your skills”

metering is fooled into supplying too much or too little power, then all but the most basic flashguns usually offer some form of flash compensation that allows you to dial the power up or down accordingly. Be aware that using a flash off-camera in TTL mode can often be problematic, especially if the two devices are placed at different distances from the subject. For this reason most off-camera enthusiasts prefer to use their flashguns in manual mode, as this provides more consistency. If you want to go down the off-camera road then be sure to buy a flash that offers a manual power mode.

## Sync speed

One important thing to grasp about the use of flash is native sync speed. This refers to the fastest shutter speed that can be used in combination with the flash. For basic compacts this is often limited to around 1/60sec, however for advanced compacts, CSCs and DSLRs it's usually around 1/200sec or 1/250sec. If you're shooting in shutter-priority or program mode and try to raise the shutter speed above the camera's maximum sync speed then the camera will automatically override you and lower it back down to the maximum sync speed.



There is a way around this, however, which is to use what's called High-Speed Sync (HSS). This feature is generally only found on more advanced cameras that employ a mechanical shutter with dual curtains. The basic premise behind it is that rather than emit a single pulse of light when both curtains are fully open, the flash instead emits a stream of high-speed pulses while the sliver of open space between the front curtain and rear curtain travels across the sensor. The main benefit of HSS is that it allows you to shoot with flash at much wider apertures in brighter conditions than would otherwise be possible. The main drawback is that higher shutter speeds reduce the amount of ambient light that reaches the sensor, which can result in darkened backgrounds in some situations.

## Flash modifiers

Once you're up and running with a portable flashgun, your next step will be to learn how to shape and control the light that is emitted from it. This is achieved with the aid of dedicated flash modifiers such as diffusers, softboxes and umbrellas. While each individual type offers its own particular strengths and weaknesses, the main thing to remember is that virtually all of them serve the same basic purpose: to diffuse and soften the light in order to reduce harsh shadows. Different shapes and designs will also alter the direction in which the light travels, generally either focusing it into a narrow beam (e.g. snoots) or spreading it as wide as possible (e.g. shoot-through umbrellas). Softboxes are considered by many to be a good halfway house between the two as they diffuse and soften the light from your flashgun, while spreading it in a more controllable way than an umbrella. This makes it easier to illuminate specific areas of your frame without too much light spilling out into other areas.

## Specialist flashguns

While traditional flashguns are ideal for general purpose photography, many macro and portrait specialists prefer to use either ringflash or dedicated macro flash devices instead. These work in exactly the same way as traditional flashguns, but look markedly different. A

### OFF-CAMERA FLASH

As well as being mounted on the hotshoe to provide direct, forward-facing light, flashguns can also be used off-camera and placed virtually anywhere. This gives you total control over the direction of the light, so you can light your subjects in much more interesting ways. You'll want to trigger your flash so that it fires as you press the shutter button, and the most common way is to use wireless flash triggers. These generally come in two parts: a commander unit that attaches to your hotshoe, and a receiver unit that attaches to the flash. Some cameras – for example those within Nikon's Creative Lighting System and Canon's Wireless Flash System – can even trigger a flashgun mounted off-camera via infrared using the camera's pop-up flash unit. Unlike radio-based triggers these require a clear light of sight. The Strobist website ([www.strobist.com](http://www.strobist.com)) is a great resource on using off-camera flash.

ringflash is designed so that it sits on the front-end of a lens with the flash elements encircling the whole lens. This has the effect of removing shadows from small subjects that are being photographed close up, hence their appeal to macro specialists. Some professional portrait photographers also like using ringflash devices because of the distinctive circular catchlights they produce in the model's eyes.

## Flash modes

While it's worth investing in a decent flashgun to develop and refine your flash skills with, it's also worth getting to grips with the individual modes offered by your camera's pop-up flash unit. The number of flash modes offered does vary between cameras, however, at the very least you can expect to find a fully Automatic mode whereby the camera automatically calculates how much flash power is required. While it's useful for shooting off-the-cuff candids with, it's by no means foolproof and there will be occasions when your camera gets things wrong. Thankfully, most cameras offer a range of alternative settings you can employ in order to get the shot you want.

While shooting in the midday sun guarantees plenty of ambient light, it often results in darkened eyes and unflattering shadows across the face when shooting portraits. Shooting into the sun, meanwhile, will result in an image where the subject is at least partially if not wholly silhouetted. One way to alleviate these problems is to use Forced Flash mode. This is commonly referred to as Fill Flash and is used to eliminate unsightly shadows to produce a much cleaner

and flattering image of your subject.

If you're shooting at dusk and want to retain some of the ambient light in the background then slow-sync mode is a useful feature that keeps the shutter open slightly longer. This has the effect of brightening dimly-lit backgrounds behind your subject. It can also be used to good artistic effect when your main subject is moving and you want to capture some of that movement.

At some point we've all taken flash-powered portraits where the subject's eyes take on a demonic red glow. This is due to the light from the flash bouncing off their retina, and is most common when the subject is positioned close to your camera. It's relatively easy to fix in post production, however if you want to try to avoid it altogether most cameras offer some kind of Red Eye Reduction mode. This works by shining a pre-flash light into the subject's eyes a split-second before the main flash fires. This has the effect of narrowing the subject's pupils, which reduces the chance of redeye. If you're using a hotshoe-mounted flash, another way to avoid it is to bounce the flash off a wall or ceiling.

If you're shooting a moving subject and want to capture a sense of that movement then Front Curtain Sync and Rear Curtain Sync are two handy flash modes to call on. The former fires the flash as soon as the first curtain opens, while the latter fires it just before the rear curtain closes. In terms of results the former creates a blur in front of the moving subject, while the latter creates a blur behind it. Using a slower shutter speed increases the effect.

Fill in flash is useful on bright days with the sun behind the subject, as it avoids the subject being left in shadow



# Flashguns and flash accessories

We hope we've demonstrated that using flash is nothing to be afraid of, and that mastering it is another useful tool to add to your photographic armoury. With luck, you'll be raring to give it a go yourself – but where should you start? On the opposite page, we recommend six flashguns that are worth considering if you decide you are ready to dip your toe in the water. They come in a range of prices, but none of them should break the bank.

On this page, you'll find a range of accessories to help you control your flash and manipulate its output – from gels to control colour temperature, to a nifty little softbox to diffuse the flash's output, to a power pack that will prolong the usage of your chosen flash.

All you need to do now is get out there and start shooting!



## Rosco Strobist Collection £10

[WWW.ROSCO.COM](http://WWW.ROSCO.COM)

By default the light emitted from flash has a colour temperature of 5000K, which is approximately the same as the ambient light at noon on a sunny day. That's fine if you only ever shoot in the midday sun, but if you're shooting indoors under fluorescent lights (c.2500K) or household light bulbs (c.2700K) then the mixture of different colour temperatures can produce unsightly colour casts. The easiest way around this is to change the colour temperature of your flash using a strip of gel so that it matches the colour temperature of the ambient light. This comprehensive gel pack from Rosco contains 50 individual gels that, between them, cover 20 colour temperatures. Simply attach one to the front of your flashgun, set your camera's colour temperature to match and say goodbye to unseemly colour casts. They can also add a bit of colour to your flash for dramatic or artistic effect.



## Lastolite Ezybox Speed-Lite 2 Softbox £90

[WWW.LASTOLITE.CO.UK](http://WWW.LASTOLITE.CO.UK)

One reason off-camera flash has become so popular is that it allows you to take complete control over the direction of the light emitted by your flashgun, which in turn enables you to produce more interesting pictures with a much greater sense of depth. This is especially true when shooting portraits, where careful lighting helps the person to really 'pop' from the image. In order to achieve these goals a decent light modifier, such as a softbox or shoot-through umbrella, is a must-have tool. These are primarily used to diffuse the light to produce better skin tones and softer, more subtle shadows. The Lastolite Ezybox II is a lightweight 22cm-wide softbox that is specifically designed to fit directly onto hotshoe flashguns. Quick and easy to assemble, the Speed-Lite 2 can be used either on or off-camera to soften and diffuse light for more flattering results.



## Gary Fong Lightsphere Collapsible £50

[WWW.GARYFONG.COM](http://WWW.GARYFONG.COM)

Inside the box of most flashguns you'll find a small translucent diffuser that clips on to the end of the flash in order to soften the light it emits. While these are small and practical, they don't always get the best results. The Gary Fong Lightsphere has been around in one form or another since 2004 during which time it has undergone numerous revisions. The latest incarnation uses the same soft translucent rubber that allows the Lightsphere to be collapsed into itself for easy storage but adds a new 'speed strap' design that produces a better fit regardless of the size of your flashgun. If you regularly shoot events or weddings then it's a fantastic piece of kit that's easy to use and produces great results. The basic kit comes with a translucent white dome; however you can also buy kits that include an AmberDome warming dome and a GrayDome colour correction dome.



## Nissin Power Pack PS 8 £120

[WWW.NISSINDIGITAL.COM](http://WWW.NISSINDIGITAL.COM)

Virtually all hotshoe flashguns use four AA batteries, and while it pays to invest in a set – or indeed a couple of sets – of rechargeable batteries, that still leaves you with the potential problem of having to change your batteries midway through a shoot. Your flashgun can also be slow to recharge in between full-power flashes when using AA batteries, which can lead to frustrating delays. If this sounds familiar, you might want to consider a dedicated flash battery pack. Not all flashguns have the required input with which to attach a battery pack, but if yours does and you regularly shoot weddings or events then a power pack such as the Nissin PS 8 makes a lot of sense. Powered by a 3,000mAh battery the PS 8 is good for around 550 full-power flashes and boasts a recharge time of just 0.5 secs. That should be enough to ensure you never miss a shot or a 'moment' again.



## PocketWizard PlusX Transceiver Twin Kit £140

[WWW.POCKETWIZARD.COM](http://WWW.POCKETWIZARD.COM)

When it comes to off-camera flash, the use of radio-based wireless triggers offers a number of advantages over the infrared based triggering systems used by the pop-up flashes of some cameras. It increases the overall range of your off-camera set-up and eliminates the line-of-sight and bright sunshine issues that can affect infrared based wireless control. The PlusX is PocketWizard's entry-level model, but is built to the same high standard as devices higher up the line. The PlusX consists of a commander unit that attaches to your camera's hotshoe and a receiver unit that attaches to your flashgun. Unlike more expensive PocketWizard models the PlusX lacks an LCD display and doesn't support TTL (you'll have to set your flash power manually) or high-speed sync (the PlusX syncs to a maximum 1/250sec), but the twin-dial controls make them exceptionally easy to use.



Nikon  
SB-700  
£220

WWW.NIKON.CO.UK



Released in 2010, the SB-700 occupies the middle ground within Nikon's Speedlight range, sitting below the SB-910 (£340) and all-new flagship SB-5000 (£500) models, but above the entry-level SB-500 (£200). As such, it provides a fantastic balance of power and flexibility. While the Guide Number of 28 the SB-700 employs Nikon's i-TTL metering technology and also encompasses a multi-step power zoom range of 24-120mm. In addition, it can also be used wirelessly via Nikon's Creative Lighting System, which enables you to trigger it when mounted off-camera via the pop-up flash in compatible Nikon DSLRs. For those Nikon cameras without CLS technology, it can also be used as a commander unit to trigger other flashguns.

KEY SPECS	GUIDE NUMBER	28 (metres, ISO 100, 35mm)
	TILT/ROT HEAD	Yes/Yes
	MOTORIZED ZOOM	24-120mm
	POWER	4x AA battery
	SIZE	71 x 126 x 104.5mm
	WEIGHT	360g

Canon  
Speedlite  
430EX  
III-RT £260

WWW.CANON.CO.UK



The 430EX III-RT was released in the summer of 2015 as the successor to the popular albeit ageing 430EX II that came out in 2008. Smaller and lighter than its predecessor, the 430EX III-RT further utilises Canon's proprietary E-TTLII/E-TTL metering, supplemented by a manual mode and High-Speed Sync options. In addition it also benefits from a built-in Radio Transmitter (RT) module that enables the 430EX III-RT to be triggered wirelessly from up to 30 metres away with no direct line-of-sight requirements. Its wireless radio capabilities also enable it to be used as a wireless TTL commander unit for other flashguns, although commander control via infrared is not supported.

KEY SPECS	GUIDE NUMBER	43 (metres, ISO 100, 105mm)
	TILT/ROT HEAD	Yes/Yes
	MOTORIZED ZOOM	24-105mm
	POWER	4x AA battery
	SIZE	70.5 x 114 x 98.2mm
	WEIGHT	295g

Sony  
HVL-F43M  
£250

WWW.SONY.CO.UK



The F43M is designed to work with the current generation of Sony cameras equipped with a Multi Interface Shoe. For cameras equipped with the older Auto-Lock Accessory Shoe design, an optional ADP-AMA Shoe Adaptor (£25) is available. Positioned below the flagship F60M (£430), the F43M packs in plenty of features, including Sony's unique Quick Shift Bounce feature that allows you to laterally rotate the flash head by 90° so you can maintain an even distribution of light even while holding the camera in portrait orientation. Meanwhile a built-in LED video light on the front of the unit provides constant yet adjustable light. Last but not least, the F43M also supports wireless connectivity for creative off-camera flash set-ups.

KEY SPECS	GUIDE NUMBER	43 (metres, ISO 100, 105mm)
	TILT/ROT HEAD	Yes/No
	MOTORIZED ZOOM	23-105mm
	POWER	4x AA battery
	SIZE	75 x 140 x 87mm
	WEIGHT	335g

Metz  
Mecablitz  
44 AF-1  
£115

WWW.METZFLASH.CO.UK



Metz is a German manufacturer that specialises in flashguns and studio lights. The 44 AF-1 sits in the middle of the Metz range, below the more advanced 52 AF-1 (£180) and the flagship 64 AF-1 (£300) models, both of which come equipped with touchscreen control. That said, for those on a budget the 44 AF-1 delivers a decent amount of power and packs a range of useful features including wireless TTL control via infrared. It's also very simple to operate. The only slight drawback is that when used in Manual mode the power output is limited to just four options: 1/1, 1/2, 1/8 and 1/64. The 44 AF-1 is available for Nikon, Canon, Sony, Panasonic, Olympus, Pentax and Fuji cameras.

KEY SPECS	GUIDE NUMBER	44 (metres, ISO 100, 105mm)
	TILT/ROT HEAD	Yes/Yes
	MOTORIZED ZOOM	24-105mm
	POWER	4x AA battery
	SIZE	73 x 128 x 105mm
	WEIGHT	320g

Nissin  
i40  
£169

WWW.



With a Guide Number of 40 the i40 is a great little flashgun that packs a surprising amount of power into its diminutive body. Thanks to its twin dial control system it's also very easy to operate, with one wheel used to select the mode you want to use (TTL, Manual or Automatic) and the other dedicated to flash compensation in TTL mode and power output when used in manual mode. Complementing this are two wireless-specific modes that allow you to sync the i40 to either the pre-flash or the main flash of your commander unit. In addition, the i40 sports an adjustable LED video light on the front. The i40 is available for Nikon, Canon, Sony, Fuji and Olympus cameras.

KEY SPECS	GUIDE NUMBER	40 (metres, ISO 100, 105mm)
	TILT/ROT HEAD	Yes/Yes
	MOTORIZED ZOOM	24-105mm
	POWER	4x AA battery
	SIZE	85 x 61 x 85mm
	WEIGHT	203g



Profoto B2 250 AirTTL  
To-Go Kit £1495

WWW.PROFOTOLIGHTS.COM

The Profoto B2 bridges the gap between a regular speedlight and a studio flash head in that it's exceptionally powerful and very portable. As such it's perfect for wedding photographers or anyone looking to shoot professional-looking portraits on location. With up to 250Ws of power (about the same as six Nikon SB-910 units combined!) the B2 can be controlled wirelessly, is fully TTL compatible and also allows you to switch into manual mode. Used in high-speed sync mode the immense power of the B2 means you can select the fastest shutter speeds without suffering any noticeable drop-off in power – even with a full-sized softbox attached. It's hardly cheap, but as far as portable studio flash goes the Profoto B2 is about as good as it gets.

KEY SPECS	MAX OUTPUT POWER	250Ws
	WIRELESS CONTROL	Built-in AirTTL
	RECYCLING TIME	0.03-1.35s
	BATTERY CAPACITY	230 shots
	FLASH HEAD WEIGHT	700g
	BATTERY PACK WEIGHT	1.6kg

## Karen McDonald

EAST LOTHIAN

I am a landscape/wildlife photographer, born and raised on the outskirts of Scotland's capital city, Edinburgh. I have a passion for travelling and have been fortunate to explore some wonderful destinations.

A desire to capture my travel memories in pictures led to my passion for photography. In the early days, I used a point-and-shoot compact, always set to auto. In October 2011, after an incredible trip to the Canyonlands of southwest America, I decided to get more serious about photography. So I ventured into the realm of the DSLR and taught myself all I could, mostly from reading books and lots of practice.

Fast forward five years and photography is part of my everyday life. Looking through a lens has opened my eyes, awakened my senses, and made me fully appreciate the beauty, and indeed fragility, of our world in a way I never did before. Photography is my visual diary of places been and gone; fleeting moments in time captured in a single frame.



[WWW.PHOTOGRAPHYBYKARENMC DONALD.CO.UK](http://WWW.PHOTOGRAPHYBYKARENMC DONALD.CO.UK)

KAREN USES A

**Nikon D810**



Nikon D810 (main body), Nikon D800E  
**LENSES** Nikon 14-24mm f/2.8 G AF-S ED, Nikon 24-70mm f/2.8 G AF-S ED, Nikon 70-200mm AF-S f/2.8 G ED VR I, Nikon 80-400mm AF-S f/4.5-5.6 G ED VR, Nikon 50mm f/1.8 D AF  
**ACCESSORIES**  
 Gitzo GT3532LS Series 3 6X Systematic Tripod, Firecrest ND filters



### 1 Lake Bled Awakening, Slovenia

Early morning at Lake Bled, Slovenia, as the mountain cloud danced around The Church of the Assumption.

*Nikon D800E, 70-200mm AF-S Nikkor f/2.8G ED VR II at 100mm, 30 seconds @ f/11, ISO 100, Gitzo Series 3 Tripod*

### 2 Sunset at the Grand Canal, Venice

A classic Venice view, the Grand Canal taken from the Rialto Bridge at sunset.

*Nikon D810, Nikon 24-70mm f/2.8 G AF-S ED at 58mm, 15 seconds @ f/16, ISO 64, Gitzo Series 3 Tripod*

### 3 Namibian Light Show

An evening shooting the Milky Way in the Namibian Dunes, one of the best places in the world to see the night sky, thanks to the lack of light pollution.

*Nikon D810, Nikon 14-24mm f/2.8 G AF-S ED at 14mm, 25 seconds @ f/2.8, ISO 2500, Gitzo Series 3 Tripod*





SAMSUNG

32

**THE READER** selected for 'Portfolio' will receive an ultra-reliable Samsung SDHC PRO 32GB Class 10 memory card. It has transfer speeds of up to 90MB/s and will withstand the harshest conditions. Visit: [www.samsung.com](http://www.samsung.com)

**SAMSUNG**

3





# THE **COLLECTION** THAT KNOWS ITS WAY AROUND THE WORLD

**NEW!**

HORSESHOE BEND  
PAGE, ARIZONA

© Keith Briley

## BUILT FOR **PHOTOGRAPHERS**. DESIGNED FOR **TRAVEL**.

With an emphasis on lightweight, durable construction and slim silhouettes, **The VEO Collection** of bags, tripods and monopods is tailor-made for travel photographers.

### VEO FEATURES

- ✓ Patented Rapid Column Rotation for quick setup and compact transportation.
- ✓ Adjustable tension leg locks with convertible rubber/spike feet.
- ✓ Three different leg angles allow for greater versatility.
- ✓ Dual purpose camera bags with removable inserts and innovative VEO tripod carrying system.



VEO 235AB

VEO 37

\*VEO tripod not included

THE  
**VEO**  
COLLECTION  
TRIPODS | MONOPODS | BAGS

Available at Authorized Vanguard Dealers





Without IS

With IS

# Going steady

Since being introduced, image stabilisation technology has been the saviour of many an image. Here's how it works...

WORDS TOM CALTON

**H**ave you ever tried taking a photo with a telephoto lens, only to find it difficult to achieve a pin-sharp shot? Well, often this is caused by small movements of the camera being transferred down through the lens, which in turn generates a blur or softness to your images. This is particularly common when shooting with a longer focal length, such as 200mm, at a slower shutter speed. The magnification of the lens exaggerates even the smallest vibrations of the camera,

generating a greater amount of blur than with a shorter lens.

There are a handful of ways to fix this problem. The first would be to try using a faster shutter speed, but this isn't always possible – especially if you're shooting in low-light situations and want to avoid an increase in digital noise created by using higher ISO speeds. Another solution would be to simply mount the camera to a sturdy tripod, which will practically eliminate any movements being transferred to the camera during the exposure. The downside to this approach is that it requires you to carry an additional piece of bulky equipment with you at all times – not to mention that using a tripod is ultimately going to slow you down somewhat, which can often result in you missing the shot altogether as you spend time setting it up.

By enabling image stabilisation, it's possible to obtain sharp images of moving subjects at lower shutter speeds than normal

The final solution, and the one that we'll be focusing on, would be to invest in a new lens that includes image stabilisation technology – commonly abbreviated to IS. As the name implies, image stabilisation is designed to counteract the vibrations created when shooting handheld and in turn reduces the chances of image blur ruining your shots. IS can be quickly activated and deactivated at any time by simply using the dedicated IS switch located on the lens barrel itself. Purchasing a lens with IS will often come at a price, though, as these lenses are generally more expensive than their non-IS counterparts. However, having the advantage of dramatically increasing your chances of bagging pin-sharp shots is usually enough to persuade photographers to delve into their wallets and make the investment.

The first Canon EF lens to feature IS was initially seen on the Canon 75-300mm, which debuted in 1995. Before this, Canon's image stabilisation technology was only available in its range of camcorders. This pioneering IS lens took

# Using IS for video

If you've ever tried to use your DSLR to capture video footage handheld, you'll know that this can often result in shaky, amateurish-looking video. A great way to fix this problem is by using a lens with image stabilisation and making sure it is activated during recording. Just like when taking stills, the IS will continuously work to counteract any jarring movements while you're recording, giving smoother and more pleasing results. Obviously the IS will have its limitations and it most likely won't be able to fully counter big jolts of the camera, but providing you shoot with a steady

hand, you should notice a vast improvement in quality with just the flick of a switch.

There is a slight downside, though, and that's with the audio. If you're using your camera's built-in mic to simultaneously record audio with your video, then you may find that the slight chirping created by subtle movements of the IS will be picked up, spoiling your audio quality. A simple workaround would be to invest in an external hotshoe-mounted microphone, which should be far enough away from the source of the noise as to not be picked up.

■ approximately one second to activate and provided up to two stops of stability when in action. At the time, this provided a major advantage to photographers, particularly sports and wildlife photographers, who tend to shoot at the longer focal lengths at which camera shake becomes more pronounced. By today's standards, however, these specs are fairly primitive, as modern versions of IS are now able to provide stabilisation with shutter speeds of up to four stops slower than normal (more on this later). That said, credit has to be



IS is easily activated with a flick of a switch. Mode 1 is for standard shooting, while Mode 2 is useful for panning shots

given to this pioneering model, as it helped to pave the way for the impressive technology that is commonly found on a range of Canon lenses today, including the Canon EF 24-70mm f/4L IS USM and EF 70-200mm f/2.8L IS II USM lenses.

## How it works

In layman's terms, Canon's IS system works by firstly using a set of internal gyro sensors that detect the speed and angle of any camera movements. This sensor data is then passed on to a microcomputer within the lens. The microcomputer analyses the data then transfers a set of orders over to a special stabilisation lens group, which will move independently at the necessary speed and direction that will successfully counteract the camera movements. As a result of this process, the image appears almost completely static to the image sensor, despite the fact that the camera and lens are still moving.

On the latest versions of Canon's image-stabilisation system, this series of actions is started within 0.002 of a second, meaning that it gets to work almost at the instant that the camera starts to move. What's more, this process is repeated continuously



Optical stabilisation is also found on third-party lenses. For this shot IS (Mode 2) was deployed on the Sigma 150-600mm f/5-6.3 C DG OS HSM lens that was attached to a Canon EOS 5D Mark III



A solid focusing technique combined with an image stabilised lens can produce incredibly sharp results

© MICHAEL TOPHAM



## Why not to use IS on a tripod

A common mistake made by amateur photographers when they first purchase a lens with image stabilisation is to keep it on at all times. As a general rule of thumb, it's always best to only use IS when you actually *need* to use it – i.e. when you're shooting handheld in low light. The reason for this is that there are some situations where having the IS activated can actually be detrimental to image quality. A prime example of this is when shooting on a tripod and using a slow shutter speed. The misconception here is that by having IS activated, you will have an additional layer of stabilisation, whereas in reality the IS itself can do the exact opposite and actually generate blurred images. This is down to how the IS system operates, as it will try to compensate for movements that aren't there, resulting in softened or shaky images.

There is a slight exception to this rule, however, as some more modern Canon lenses now feature Tripod Detection, which causes the IS system to deactivate once it senses that the camera has been locked off on a tripod, allowing you to keep the IS activated continuously.

## “On the latest versions, image stabilisation gets to work almost at the instant that the camera starts to move”

so that the lens can provide constant reactions to even the smallest of changes in the camera's movement speed and direction during shooting.

Although image stabilisation is undeniably a fantastic photographic tool, unsurprisingly it isn't without its limitations. The effectiveness of the IS is measured in stops; for example, as we've already briefly touched upon, the latest Canon lenses are kitted with the most up-to-date IS, which is able to reduce shake by up to four stops. This effectively means that you can shoot using a shutter speed that is up to four stops slower and still have the potential to capture sharp shots.

### Shutter speeds

When using a standard lens, in an attempt to avoid camera shake, most photographers aim to shoot with a shutter speed of no less than double the focal length of their lens. For example, if you are shooting with a 200mm lens, you'd aim for a shutter speed of 1/400sec or faster in order to give yourself the best chance of obtaining a pin-sharp shot. When we take into consideration that modern versions of IS can allow you to shoot up to four stops slower and still obtain sharp shots, using the same numbers as above, we can now go as low as 1/25sec and still have the

potential to obtain sharp shots with a 200mm focal length. I say 'potential', because this is not always guaranteed as it will all depend on the ferocity of the camera shake the IS has to

When you're setting up a shot on a tripod you will want to get into the habit of deactivating the IS

contend with, as well as its ability to successfully counteract it.

It's also important to remember that image stabilisation only applies to movement created by the camera, not movement within the frame. For example, if you were taking a photo of a fast-moving object, such as a racing car, the car itself will still appear blurred when shooting with IS activated and using a slower shutter speed, as the car is moving across the frame. In this instance, you would be forced to use a faster shutter speed if you wanted to freeze its motion.

As we've already touched upon, once the IS system is activated, it will continuously aim to counter lens movements in all directions, but what happens if you want to capture panning shots? Well, on some more recent Canon lenses, next to the IS switch on the lens barrel itself is a secondary switch that offers a different mode. With the switch set to Mode 1 the IS will operate in the standard manner to counteract movements in all directions. However, flicking the switch over to Mode 2 will cause the IS to only counter vertical motions and not horizontal ones. This is particularly useful for panning shots, where you want to track a moving subject while keeping the background nice and blurred to give the image a sense of motion. Taking advantage of these different modes is the best way to get the most out of the lens and what it has to offer.



© MICHAEL TOPHAM

## SPECIAL SUBSCRIPTION OFFER

# Subscribe

to What Digital Camera and

# SAVE

up to

# 43%

### PLUS, enjoy these great subscriber benefits:

- Save up to 43% off the normal subscription rate
- That's just £2.54 per issue!
- Enjoy the luxury of home delivery
- Go Digital! Download your magazine right away. Every subscription package includes access to the digital version for iPad and iPhone\*
- Get exclusive Rewards for subscribers every month. Join Rewards at [whatdigitalcamera.com/rewards](http://whatdigitalcamera.com/rewards)



Subscribe online at

## wdcsubs.com/13A



Or complete  
the coupon below



**THE DIRECT DEBIT GUARANTEE** • This Guarantee is offered by all banks and building societies that accept instructions to pay Direct Debits. If there are any changes to the amount, date or frequency of your Direct Debit Time Inc. (UK) Ltd will notify you 10 working days in advance of your account being debited or as otherwise agreed. If you request Time Inc. (UK) Ltd to collect a payment, confirmation of the amount and date will be given to you at the time of the request. • If an error is made in the payment of your Direct Debit, by Time Inc. (UK) Ltd or your bank or building society you are entitled to a full and immediate refund of the amount paid from your bank or building society – If you receive a refund you are not entitled to, you must pay it back when Time Inc. (UK) Ltd asks you to • You can cancel a Direct Debit at any time by simply contacting your bank or building society. Written confirmation may be required. Please also notify us.

Complete this coupon and send to: **FREEPOST RTKA-YLJG-HAAK, Time Inc. (UK) Ltd, Rockwood House, 9-16 Perry Mount Road, HAYWARDS HEATH, RH16 3DH (NO STAMP NEEDED – UK ONLY)**

**YES! I would like to subscribe to What Digital Camera and save up to 43%**

Please tick your preferred payment method:

☐ UK Direct Debit - Pay only £16.49 every 6 months, SAVING YOU 43% **TOP OFFER**

☐ 2 years (26 issues) Credit Card - Pay only £66.49 (full price £117.20) Saving 43% across the two years

☐ 1 year (13 issues) Credit card - Pay only £34.99 (full price £58.60) Saving 40% across the year

#### Your details

Mr/Mrs/Ms/Miss: Forename:

Surname:

If you would like to receive emails from What Digital Camera and Time Inc. (UK) Ltd containing news, special offers, product and service information and, occasionally, take part in our magazine research via email, please include your email below.

Email:

Address:

Postcode:

Home Tel No: (inc. area code)

If you would like to receive messages from What Digital Camera and Time Inc. (UK) Ltd containing news, special offers, product and service information and, occasionally, take part in our magazine research via your mobile, please include your mobile phone number below.

Mobile No:

Date of Birth: DD MM YYYY

#### I would like to send a gift to:

Please also fill out 'Your Details' on the left. To give more than one subscription, please supply address details on a separate sheet.

Mr/Mrs/Ms/Miss: Forename:

Surname:

Address:

Postcode:

#### Choose from 3 easy ways to pay:

1. I enclose a cheque/postal order made payable to Time Inc. (UK) Ltd., for £

2. Please debit £ from my:

☐ Visa ☐ Visa Debit ☐ MasterCard ☐ Amex ☐ Maestro Card No:

Start Date (Maestro only): Issue No. (Maestro only): Expiry Date:

Signature: (I am over 18) Date:

Offer open to new subscribers only. Final closing date for all orders is **March 31st 2016**. The full subscription rate is for 1 year (13 issues) and includes postage and packaging. If the magazine ordered changes frequency per annum, we will honour the number of issues paid for, not the term of the subscription. Direct Debit offer is available to UK subscribers only. Credit/debit card charges will be taken in sterling. This offer is subject to a minimum term of 12 months. Cancellations are not permitted until the end of this initial period and we will not issue you a refund. Should you wish to cancel after the minimum term, please contact our customer care team. For enquiries and overseas rates contact [magazinesdirect@quadrantsubs.com](mailto:magazinesdirect@quadrantsubs.com) or call +44 (0) 330 333 0233. \*The digital version comes free with the print edition of your subscription and is available strictly on a trial basis. Time Inc. (UK) Ltd reserves the right to withdraw free access to the digital version at any time. The Rewards scheme is available for all active print subscribers of magazines published by Time Inc. (UK) Ltd, free of charge. Digital subscribers also get access as long as the subscription has been purchased directly through the publishers at [magazinesdirect.com](http://magazinesdirect.com). Full terms and conditions are available at [mymagazinesrewards.co.uk](http://mymagazinesrewards.co.uk). What Digital Camera, published by Time Inc. (UK) Ltd, will collect your personal information to process your order. What Digital Camera and Time Inc. (UK) Ltd would like to contact you by post or telephone to promote and ask your opinion on our magazines and services. Please tick here if you prefer not to hear from Time Inc. (UK) Ltd. Time Inc. (UK) Ltd may occasionally pass your details to carefully selected organisations so that they can contact you by telephone or post with regards to promoting and researching their products and services. Please tick here if you prefer not to be contacted. Time Inc. (UK) Ltd who publish What Digital Camera would like to send messages to your mobile with offers from carefully selected organisations and brands, promoting and researching their products and services. If you want to receive messages please tick here.

3. Pay only £16.49 every 6 months by Direct Debit (UK only)

Instruction to your Bank or Building Society to pay by Direct Debit For office use only. Originator's reference - 764 221

Name of Bank:

Address:

Postcode:

Account Name:

Sort Code:

Account No:

Please pay Time Inc. (UK) Ltd. Direct Debits from the account detailed on this instruction subject to the safeguards assured by the Direct Debit Guarantee. I understand that this instruction may remain with Time Inc. (UK) Ltd. and if so, details will be passed electronically to my Bank or Building Society.

Signature: (I am over 18)

Date:

CODE: 13A





# Shooting video with your Nikon DSLR

Plenty of film directors, TV producers, and advertisers are using footage shot with DSLRs, so isn't it time we all pressed the red button?

WORDS AND PICTURES MARK HIGGINS

In 1879, photographer Eadweard Muybridge created the zoöpraxiscope, a device that combined three technologies: photography, the magic lantern and the zoetrope. Using discs painted with galloping horses, athletes running and women dancing, Muybridge created some of the first sharable animations,

If you place the camera around your neck and push it away until the strap is taut, you can create a stable base using just your body


and then proceeded to wow crowds across Europe and America with his invention. Fast forward 137 years and we can now produce HD (High Definition), Full HD and 4K videos using the same device we use to take photographs – a DSLR. We can also share footage with as many people as we like via email and social media. Now that's progress.

The heyday of the camcorder is over, and more and more people are now using smartphones, tablets, and stills cameras to record videos, before uploading their footage to the internet using Wi-fi technology. Until

fairly recently, photographers were reluctant to shoot 'serious' footage on DSLRs, fearing that the quality was just not there. But times have changed, and without us really noticing, film directors, TV producers, and advertisers have been using stills cameras for part, or occasionally all, of their projects. The majority of the television series *Dexter* was shot with a Nikon D800, for example.

It's no longer a question of whether DSLR video is good enough, more whether or not we choose to use it. Furnishing our cameras with one extra button doesn't cost much, so we can shake off the suspicion that manufacturers are bumping up prices to fund a feature we won't use. The technology is there, so why not embrace it.

## HD, Full HD and 4K resolution

There are various reasons for shooting video on a DSLR, compared to a smartphone or a tablet, but superior quality is top of the list. Back in January, Nikon released the D5, the first in the line-up to offer 4K video. 

■ To understand what this really means for any budding filmmakers, we need to look at resolution and frame rates.

As recently as the 1990s, many families still owned at least one CRT (Cathode Ray Tube) television set. This device was roughly cube-shaped, and had an aspect ratio of 4:3, with pixel dimensions of around 640 x 424. Many popular programmes, such as *Only Fools and Horses*, were filmed in 4:3 in what we would now consider very low resolution; as televisions were equally primitive, the results looked fine. Today, however, we use rectangular, flat-screen televisions, with aspect ratios of 16:9, and pixel dimensions of around 1280 x 720. As

The Nikon D810 offers Full HD (1920 x 1080) video at 24fps and 60fps, as well as a wealth of manual controls and audio level adjustment

a result, when we sit down to watch an old episode of *Del Boy* wheeling and dealing, the visual experience is disappointing – the input doesn't match the output, and the conflict is hard to ignore.

These days, most DSLRs are capable of shooting HD (1280 x 720) and Full HD (1920 x 1080) video, which looks great on modern-day viewing devices. But in April 2012, Canon upped the ante with the launch of the EOS-1D C, the first DSLR to offer 4K (4096 x 2160) video capture. So what's the point of all those extra pixels? Well, essentially, more pixels means more information, leading to a higher level of detail, more realistic colours, broader dynamic range, and

increased options when it comes to editing. The downside to this technical wizardry is that if you don't own a 4K television or computer screen you won't be matching pixels to pixels, so you're unlikely to see any difference between Full HD and 4K. But what you are doing is future-proofing your work – 4K is here to stay and, inevitably, the price of output devices will fall as demand for them increases.

## Frame rate and shutter speed

Once you've chosen a suitable resolution, you can turn your attention to selecting an appropriate frame rate. Most DSLRs offer at least four



## Understanding audio

If you've ever held your ears while watching a film, you'll know that sound has a significant role to play in building tension, communicating emotion, and dictating the pace of a story. Unfortunately, capturing sound on video is notoriously tricky.

The built-in microphone on your DSLR is okay for general use, but to get the best out of it you need to be in a quiet environment, close to the sound source. For superior results, use an external microphone – there are three main types: handheld, lavalier and shotgun. The Nikon ME-1 stereo microphone is a great all-rounder: it can be positioned on or off-camera, and records sound directly in front of it, while reducing unwanted background noise.

On windy days you can try what's known as a 'dead kitten' – a furry device that slips over the microphone and acts as a wind screen. In conditions like these, it's also worth activating the wind filter on your camera.

Many Nikon DSLRs allow you to monitor sound during a recording – when you're in Live View look for two meters on the left-hand side of the screen; if they head into the red, it's an indication that the audio may be becoming distorted and you'll need to take action.

Don't think of sound as secondary to visuals: spend what you can on an external microphone, and then make the most of it by placing it as close to the sound source as possible.

## Step by step

### Shooting video with your Nikon DSLR

#### ONE



Mount your camera on a tripod or a monopod. Alternatively, place the strap over your neck and pull it taut for extra stability.

#### TWO



Bring up the Shooting menu and select an appropriate resolution and frame rate. Activate Live View via the switch on the camera body.



options: 24fps, 25fps, 30fps and 60fps. (The reason that 24, 25 and 30fps are so common is that footage intended for UK television is shot at 25fps, while programmes for US television tend to be filmed at 30fps.) You might be tempted to use 30fps instead of 25fps for all your work, but remember that these files include audio, too, and will fill up your storage faster than a James Bond car chase. If you're unsure as to the end use of your video then set the resolution to Full HD, and the frame rate to 24fps.

Once you've decided on a frame rate, make sure that you stick to it – switching speeds halfway through a project can look amateurish. Having said that, a touch of slow motion can add a nice change of pace to a sequence. To record slow motion, select a relatively low resolution (1280 x 720, for example) and opt for the highest frame rate your camera will allow (usually 60fps). When the clip is played back at the normal speed the extra frames will reveal previously hidden details.

Camera settings

As we all know, three main things influence exposure: the aperture of the lens, the sensitivity of the sensor (determined by the ISO), and the shutter speed. When it comes to shooting video the last of these is, in many ways, the most important. When you're shooting at 24fps you need a shutter speed that at least matches this rate – in this instance 1/25sec. But for more natural looking action, and a smoother transition between individual frames, select a shutter speed that is roughly double the frame rate – in this case 1/50sec.

KEEPING THINGS STEADY

Unlike camcorders, DSLRs are not designed to be handheld for long periods. To solve the problem you can invest in a tripod with an expensive fluid head, but your regular camera tripod, or a monopod, will work just as well, leaving you with some spare cash to spend on a microphone (see Understanding Audio). You can also use your body to keep things steady: just place the camera around your neck and push it away from you until the strap is taut – it's surprisingly effective for panning.



Footage shot in HD or Full HD has a letterbox shape that's ideal for modern rectangular, flat-screen televisions

“Decide on a frame rate and stick to it – switching halfway can look amateurish”

Using this rule of thumb, you can introduce motion blur, without things looking too dreamy. You can, of course, use a much faster shutter speed than your frame rate, which can lead to energetic, but uneasy footage. Matching the frame rate to the shutter speed can limit your creativity a little, because you have less choice when it comes to selecting an aperture and ISO, but don't forget that you're using a camera not a camcorder, so the low-light performance will be more than acceptable. On the flipside, you can limit the light entering the lens by using an ND filter. Again, once the shutter speed has been decided resist the temptation to change it mid-shoot.

Your DSLR has a wealth of wonderful automatic and semi-auto controls, but when it comes to video, many of these are best left well alone. Every time you turn a dial, press a button, or allow the lens to 'hunt'

while focusing, the built-in microphone picks up the noise produced by the camera. For consistent, professional results do as much as you can yourself, preferably before you press Record. For a start, you can use manual focus and manual exposure. Focusing by hand will allow you to be totally precise, but it takes practice, so give yourself some time to experiment. If you're struggling to keep things sharp, consider investing in an LCD magnifier such as the Hoodman Hoodloupe, and look for lenses with broad focusing rings.

Shooting video requires skills that photographers already have in abundance, such as patience, an eye for composition and a natural sense of timing. As a result, what seems like a steep learning curve is actually more of a steady incline. Being a stills photographer is the hardest part – once you've mastered that, all you really have to do is press Record.

THREE



Select Manual exposure on the Mode dial. When it comes to shooting video many of the automatic settings are best left well alone. Slide the focusing switch on the lens to M (Manual) too.

FOUR



If you're shooting at 24fps, select a shutter speed of 1/50sec to introduce natural blur, while smoothing the transition between frames. Decide on the depth of field you desire, and then choose an appropriate aperture. Finally, set the ISO.

FIVE



With your exposure set, check the audio levels on the LCD screen, and make any necessary adjustments. Now focus the lens manually on your subject. Press Record and you are ready to film.

# Take your photography to the next level WITH AN SPI COURSE

- Master your camera and hone your photography skills
- Study in your own time and at your own pace
- Receive detailed feedback from an expert photographer



ALL PICTURES © LEE HETT-POWELL



Enrol today and get a **FREE Complete Guide to Photography essential pack\***

Including 164-page handbook, 2 tutorial DVDs, Essential Photo Tips Guide and lens cloth

Call **0203 148 4326** or visit **WWW.SPI-PHOTOGRAPHY-COURSES.COM**

PLEASE QUOTE AP AD WHEN PLACING YOUR ORDER \*WHILE STOCKS LAST



The distance learning was very helpful to me as I cannot commit to regular days in the week. I enjoy the feedback, which is honest and fair but constructive.

**Lee Hyett-Powell**  
Diploma in Digital Photography





© MATT HART

# AF in the **X-T1** and **X-T10**

Fujifilm's firmware updates have turned the autofocus modes of the X-T1 and the X-T10 into very different beasts. **Jon Stapley** speaks to three Fuji photographers to see what they can do

WORDS **JON STAPLEY** PICTURES **MATT HART, KEVIN MULLINS & JOHN ROURKE**

Once upon a time, you'd buy your camera and be stuck with it. For better or worse, until you dragged yourself back to the shop for a replacement, your camera's quirks, foibles and idiosyncrasies would be yours to keep.

Today, of course, this is not the case, thanks to the wonderful thing that is firmware. The upswing in connectivity means that manufacturers can upgrade the capabilities of their cameras remotely and give users the benefits of new technologies without needing to tinker with the bodies.

Some of the most comprehensive firmware updates have come from Fujifilm, who have shown themselves to be not at all averse to extensively overhauling the way their cameras operate in the name of improvement.

One of the most notable examples came last year, when Fujifilm

announced a radical update to the focusing system of its popular X-T1, to bring it in line with the newer X-T10. This included new autofocus modes, improved accuracy, extra features such as eye detection, an Auto Macro mode, and plenty more (see over the page for a run-down).

We spoke to a few Fujifilm photographers to find out how these upgrades can help in different genres and styles of photography. Read on to see what the upgrades can do for your Fuji shooting.

Use this link to upgrade your firmware: [www.fujifilm.com/support/digital\\_cameras/software/firmware/x/xt1/index.html](http://www.fujifilm.com/support/digital_cameras/software/firmware/x/xt1/index.html)

## Street **Matt Hart**

Matt is a street photographer and dedicated Fujifilm photographer. Wielding an X-T1 and an X-T10 as well as a broad selection of glass, he captures fleeting moments in

the streets, often while moving himself, and therefore needs a setup that can keep up with him. He explains how the changes to the focusing in the X-T cameras have helped him, and how best to use them for your own street photography.

'For street photography, the biggest change comes with using continuous focus,' he says. 'I use the 27mm lens on the X-T10, and I find now that as I'm walking down the road if I see someone walking towards me I can carry on walking. I could never do that before; I used to have to stop and stand still to focus. Now I just switch to continuous and use the large green square and allow it to track someone when they're coming towards me. It nails it nearly every time.'

'Wide tracking I don't use as much, but it has its place. If, say, someone is crossing from side to side in the street, I'll switch on to wide tracking and then pull the camera ahead as if I'm clay pigeon shooting. From there I let it track the person, and just follow them across the road while the camera meters and tracks.'

'One thing I do is turn off face

The AF upgrade to Fujifilm's X-T1 and X-T10 models includes improved accuracy and eye detection

■ detection. It's really good at picking up faces – so good in fact that it picks up anything that resembles a face, including a poster or picture behind a subject! That's thrown me right out in the past, so for street photography you're best off leaving it off.

'It's also worth knowing that the autofocus is better on some lenses than it is on others. It's really good on the 27mm, I think because it's a pancake lens with very little movement. The new 35mm f/2 is also amazingly fast, and the 16mm. I tend to stick to certain lenses for this reason.'

*Matt Hart is a street photographer, and can be found at [www.matthewhartphotography.com](http://www.matthewhartphotography.com)*

## Weddings/ Documentary Kevin Mullins

Kevin Mullins describes himself as a documentary wedding photographer. This means he shoots weddings, but in a candid style, with no posing or directing. He captures things as they happen on the day, and this means he needs to be responsive and have kit that works well but isn't intrusively large and obvious.

'When I moved to a mirrorless system, the way I started shooting changed,' he says. 'I started getting closer, shooting more intimate and emotional images.'

He currently uses two X-T1s as well

Candid wedding photography is all about capturing a fleeting moment, which requires fast, responsive AF

as an X100T and has found various benefits in the latest updates to the AF system.

'They updated a lot of the algorithms so that in low-light situations it's much easier for the camera to focus,' he says. 'The phase-detect pixels are more accurate, and this is great for things like the first dance, when it's really dark.'

'When I'm shooting weddings, I don't tend to use flash, so using face detection to a certain extent can work really well. Even eye detection can be useful to a certain extent now that they've rolled out all these new updates.'

'The updates are especially great for people who use focus tracking. I try not to rely on this too much, but it's useful for certain situations such as a bridal processional or the confetti throw.'

*You can see loads of Kevin Mullins' wedding images at his website, [www.kevinmullinsphotography.co.uk](http://www.kevinmullinsphotography.co.uk)*



© KEVIN MULLINS

## Automotive John Rourke

John Rourke's day job involves, to put it simply, shooting vehicles at speed. His company, Adrenal Media, is the official agency of photographers for the FIA World Endurance Championships and the European Le Mans Series, home of the famous Le Mans 24. He and his team cover some of the most exhilarating action in the world, and it's imperative that his camera is able to keep up. For that, he turned to a mirrorless system.

'I have a bag of Canon equipment which is just a large paperweight at

## Step by step

The five main improvements to the Fujifilm X-T1 and X-T10 autofocus systems



### ZONE MODE

Zone mode allows users to choose a 3x3, 3x5 or 5x5 zone from the 77-point auto focus area, and then will continue tracking a subject in the selected zone. The 3x3 and 3x5 zones at the centre, in particular, offer extra-fast focusing with the use of the built-in phase-detection pixels.



### WIDE/TRACKING MODE

In this mode, the camera displays the area in focus, and tracks the subject across the entire 77-point AF area, allowing for focus on a single subject that is moving vertically, horizontally, or back and forth.



the moment,' he says. 'Every time I look at it I don't know what to do with it. It took me years to build up this set of L glass!'

The reason for this, of course, is because John discovered the Fujifilm X-Pro1 and the lighter mirrorless system. Originally purchased as John's second camera, the X-Pro1 quickly became indispensable, until he found himself with it round his neck at all times in the pits and the lanes while the cars roared by.

Since then, he's upgraded his kit a little, currently rocking three X-T1s, an X-T10 and his trusty X-Pro1. This naturally necessitates a good glass selection, and among his favourites

are the 90mm f/2, the 35mm f/1.4, and the zoom trio of the 10-24mm, 16-55mm and 50-140mm.

John has found that the autofocus upgrades have made a significant difference to the way he works.

'The upgrade was just a game-changer really for the X-T1,' he explains. 'As soon as we hit Version 4, a lot of the problems were ironed out, and it gets better and better every time. I think if they go for bigger glass they may have to tweak it, but I can do the job with it and that's what counts.'

'I find the different modes useful depending on what I'm shooting. The tight focusing [zone focusing]

is particularly useful for panning, as the points are grouped in the middle. If you've got cars coming round the corners, where the car is facing you as it goes into the corner, it can be extremely helpful for that.

'This is especially effective if there's more than one car in the shot. We're fans of what we call "battles" – a lot of automotive photographers will shoot just one car at a time, but for Championships we like to see two or three cars trying to overtake each other. And that's where the focusing modes can come in handy.'

*John Rourke is director of photography at Adrenal Media, [www.adrenalmedia.com](http://www.adrenalmedia.com)*

Good panning technique is crucial to successful action photography – Fuji's zone photography helps in this regard



© JOHN ROURKE

### THREE



#### IMPROVED ACCURACY

Single-point autofocus now divides the focus area into smaller sections, allowing the camera to more accurately determine the distance to the subject. Also, the built-in phase detection pixels have increased sensitivity from 2.5EV to 0.5EV.

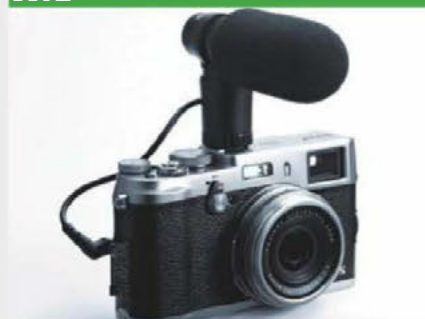
### FOUR



#### IMPROVED FACE DETECTION AND EYE DETECTION

The new update accurately and automatically detects and focuses on human eyes, even in difficult conditions.

### FIVE



#### IMPROVED MOVIES

The upgrade has also improved the autofocus action when using movie mode, making it smoother and more pleasing to the eye.



# TECHNIQUE

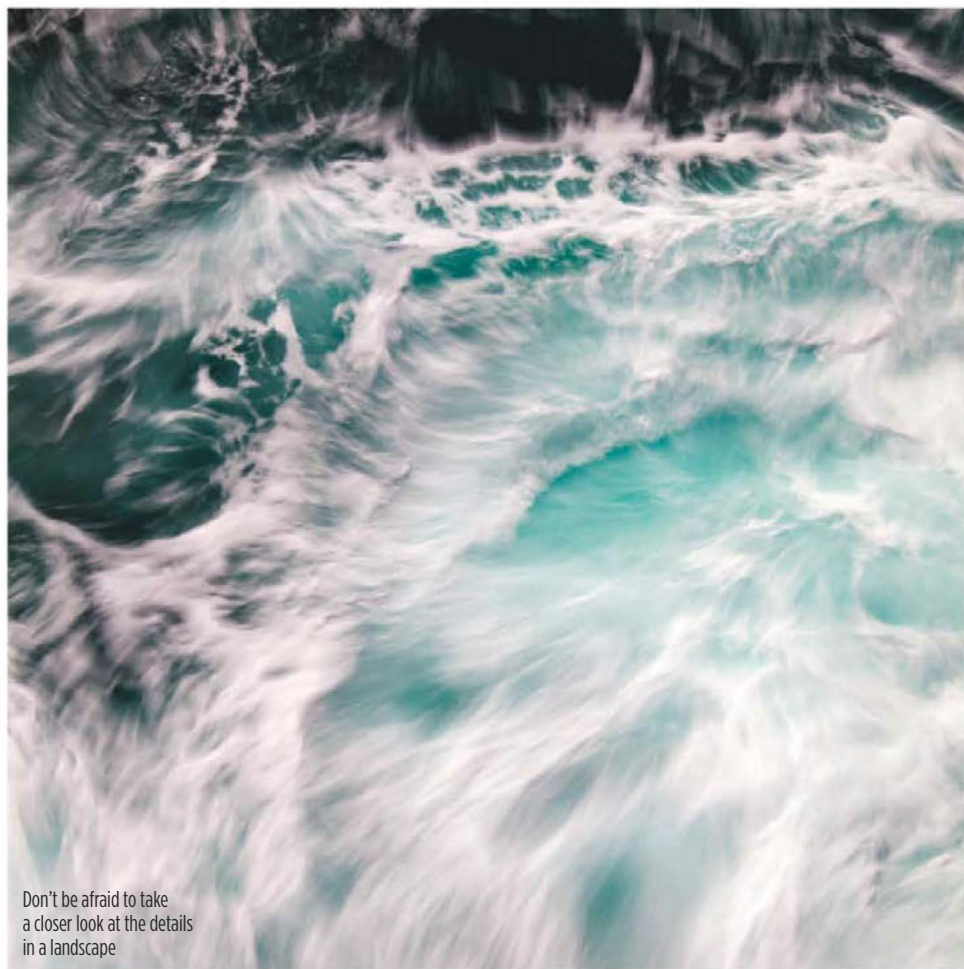


Unorthodox angles can deliver a unique look at an often-viewed subject



# Avoiding the clichés

**Jason Theaker** shares his tips on how breaking the rules can result in stronger images



Don't be afraid to take a closer look at the details in a landscape

ALL PICTURES © JASON THEAKER

It's easy to speak of 'breaking the rules', but what are the rules and who makes them? To answer that, it may be useful to look briefly at why they exist in the first place.

When an initial inquisitiveness towards photography moves beyond the casual and becomes a serious interest, many of us want to learn as much as possible and seek out information that can help us achieve the work that initially inspired us. We take advice from others who are more experienced and use it to improve. There's nothing wrong with that; in fact, it helps us speed up the learning process and achieve our objectives. Later, many of us develop tried-and-tested ways of working that fit our desired outcomes and some of them may be considered 'rules' for good technical reasons. These include using good-quality lenses, high ISO sensitivities, a solid tripod, and ensuring sharpness and good depth of field. These are all helpful for maintaining a high standard and, when moving into commercial photography, it's essential to do so.

But there are several potential problems with this technical-biased philosophy. Many of the rules can be subjective and too narrow, they can often be taken too literally and become formulaic, but most importantly, if you do things the same way as others your work may end up a little clichéd. It's a difficult thing to pinpoint, but we all have different experiences and what may be inspirational to one person could be boring and overdone to another.

## There are no rules

In truth, there are no rules, but it may be helpful to put a few of the

## KIT LIST

### ND filters

Having a range of ND filters enables you to choose different shutter speeds in all conditions, giving you maximum flexibility to experiment with movement. Don't just keep to the popular 10 stop though.



### Notepad

Good images are made 6in behind the viewfinder and you must always be ready. I find an ideas book invaluable for recording and stimulating my thinking.



### Smartphone

Use your phone camera as a sketching tool to generate ideas. Don't worry about the technicalities; just let your inspiration run free. You'll be surprised how creative you get.

### Powerful LED torch

A small powerful torch enables you to experiment with light painting in your shot. It offers more flexibility than a flash and provides a decent amount of coverage.



If you want to convey a particular mood in your shot, embrace post-processing to achieve your vision



popular photographic canons into context before I start giving you my rules for breaking them. Oh, the irony! So let's start with a tongue-in-cheek exploration of a few of my favourite rules, in no particular order. (Disclaimer: the following paragraphs may cause distress, so if you are of a sensitive nature, please turn the page.)

Above all you must 'get it right in-camera', because computers and Photoshop are tools used by cheats and that pointy-horned, forked-tail guy. It doesn't matter that advances bring new and exciting developments, because anything old is always better, especially if it makes your life harder, because we all know you need to work at it to be good. In order to achieve said camera excellence, for landscapes you'll need to 'use graduated filters, a tripod and mirror lock-up', all initiated by a cable release to ensure that the image remains 'pin sharp' from corner to corner and free from vignetting, chromatic aberrations and noise, so when somebody gets out their magnifying glass your print is bullet proof.

You must never shoot at midday. It doesn't matter if it's Iceland in summer where midday lasts for decades – the light is always too harsh and blows your highlights.



## Why it works

In this shot, I purposely placed the distant tree in the centre. I wanted the viewer's eye to be pushed towards it by framing it around the foreground foliage. The path (that's often been mistaken for a stream, which isn't surprising in the Lake District) has been used as a lead-in line, drawing you towards the distant tree. The blown highlights to the top left of the tree are there because I'm shooting into the sun. I waited for the cloud to partly obscure the sun, which enabled me to achieve a silhouetted tree, adding to its prominent positioning at the top of the nicely curved hill. The sun also gave good contrast to the translucent leaves, helping the composition lead your eye into the shot against the dark mid-ground and heavy clouds. I feel the image offers themes of resilience and, in a subtle way, encourages you to break with convention.



# SIGMA

A lightweight and compact hyper-telephoto zoom lens featuring outstanding optical performance. The latest high-performance lens in our Contemporary line.

## **C** Contemporary **150-600mm F5-6.3 DG OS HSM**

Padded Case, Lens Hood, Shoulder Strap,  
Tripod Collar and Protective Cover included.

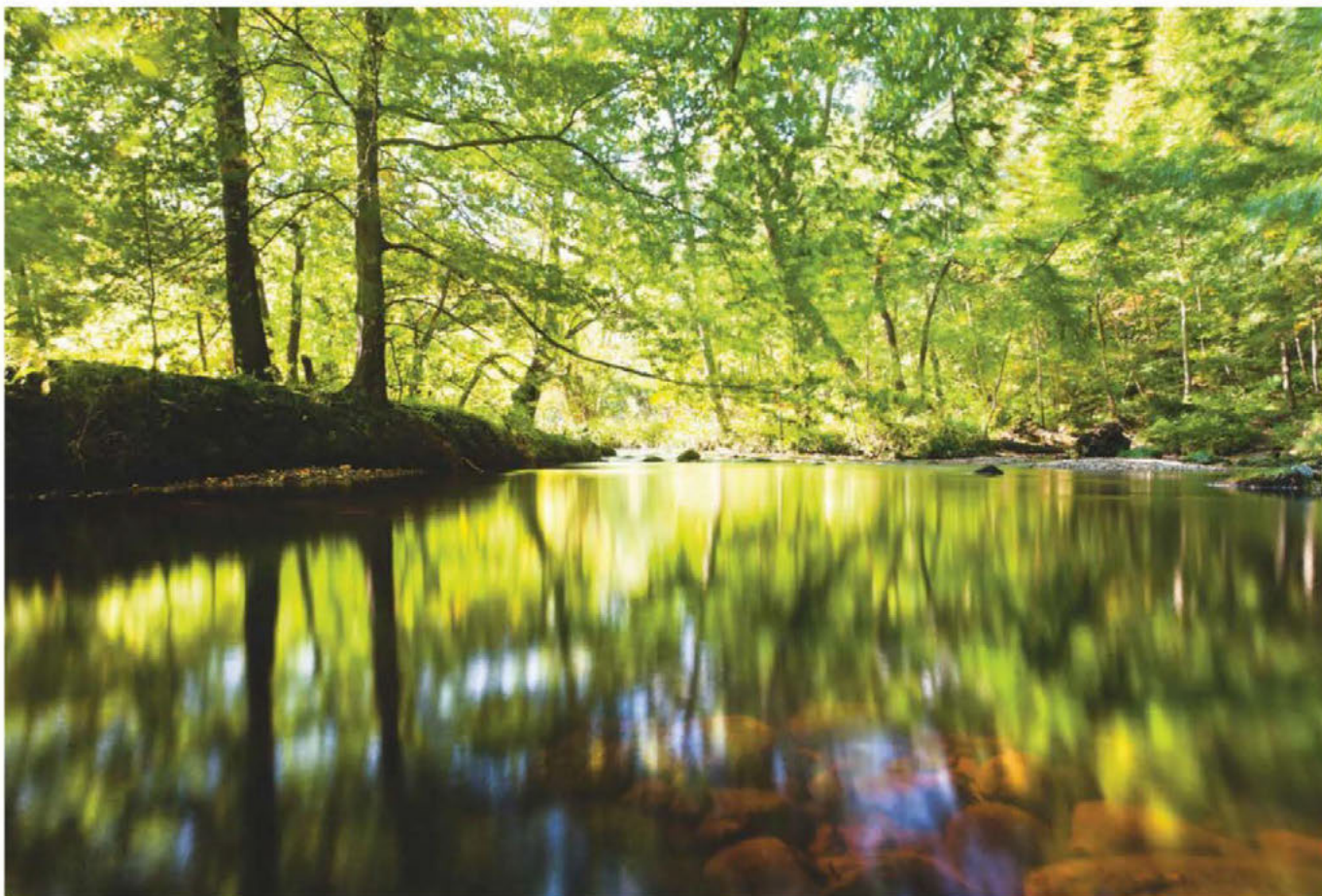
Available for Sigma, Canon and Nikon AF cameras



### **SIGMA USB DOCK**

Update, adjust and personalise. Customisation  
never thought possible. Sold separately.





Oh, and never shoot locations that you haven't visited 20 times with the very latest camera body and exotic lenses. The tilt-and-shift is optional, but shooting it on 'thirds', using lead-in lines, the 'golden mean' and avoiding central compositions isn't. When back home, minimal post-processing is acceptable, but you must keep the white balance realistic, even if shooting black & white or infrared. Above all, make sure you don't use

You're often told to avoid a central horizon, but sometimes the balance of the shot is at its best this way

the camera's default aspect ratio – 1x1, 5x4 and 16x9 cropping is much better for true representation!

### What makes photography engaging?

If you haven't already directed profanities at my words, or visited my blog to 'put me right', my light-hearted anecdote may have highlighted one or two familiar things you hold in high regard. In my

defence, I'm not saying all these rules are bad – I've already mentioned achieving good commercial standards – but in my view, what is so often overlooked in the unquestioning pursuit of them, is what makes photography engaging. All too often 'good' is synonymous with 'technically perfect', and this smokescreen stops many from experimenting with ways to engage an audience. Ideas, creativity and social meaning

## IDEAS TO TRY

As I've mentioned, there's great irony in the act of offering advice on how to ignore it. This may seem a little strange, but that's the point. You should take what others are saying and critically evaluate and manipulate it just enough to make it interesting – but not alienating to the intended audience, even if it is a narrow one. Try mixing up your ideas, use them in different unexpected conditions (force yourself to place the horizon on the centre) and challenge yourself to see the world from different perspectives (force yourself away from popular locations). It may feel frustrating and some of your images will fail, but experimentation can be fun and can generate great ideas. So long as you keep an open mind, evaluate and build on those failures, you're creating unique ideas for the future.



### In-camera movement (ICM)

ICM has become popular recently, but it's often synonymous with an anti-post-processing philosophy. My view is if the outcome is good, the journey is of secondary importance. However, ICM does disregard popular rules, namely sharpness and compositional trends.



### Central composition

I entered this shot in an agricultural show. It came second and I was 'advised' it didn't win because it was too central! I don't believe content should be ignored in favour of the rules, so disregard the naysayers and rework your composition as you see fit.



## Behind the scenes

Who says you can't make a good image at midday (see left)? I was on the Yorkshire Dales in my favourite type of inclement conditions. The wind was fierce, the clouds imposing and shafts of strong midday light were moving quickly across the scene. I set the composition to reflect an anthropomorphic 'parent-protecting-child' theme, and waited for some foreground light to pinpoint the trees. I chose to simplify the clouds with an ND 0.8 filter and used a 20-second exposure to put movement into the branches.

The lack of colour in the bright midday light lent itself to a monochrome conversion. It also added a nice level of harsh contrast that supported the concept, but countered the popular view that big tonal ranges are always good.



are the catalysts to emotive engagement. My preference is for a powerful image, with technical imperfections, rather than a strong technical image with no soul.

This is a personal choice based on my experience. I've always rooted for the underdog and empathised with the maverick. My art college days taught me to challenge the norm, to twist, distort and actively seek out originality. (See, there's the irony again). To be true to one's self.

Despite strong midday light, it was still possible to capture this striking image

'But,' I can hear you asking, 'all this surely only matters if what you're doing is for somebody, if your work has a target audience of more than one?' By aiming to stay at the edge of current trends and mixing in something different without making your images too alienating, I believe you can start to develop a personal style that distinguishes your work. This is a great goal – whether only for yourself, or for others to see the results.

So my entire philosophy is centred on eroding those creative blockages and getting people to move beyond a fixation with the rules. This will open up new and exciting ways to experiment. Please try not to focus only on whether an image is pin sharp or if the highlights are blown. If you produce something that evokes an emotional reaction in the viewer, then, in my book, you've achieved something special.



### Centre horizon

Composition is all about balance and we're often told not to put the horizon in the centre. This is to help with dynamic compositions, and often counters the empty space created by sky. But sometimes there's a natural balance to be had with this method. I say if it looks good, use it.



### Over-processed

You often hear people in photography canonising realism, in reference to excessive post-processing. Here I've embraced fantasy and mixed together elements from a few images. My intention was to focus attention on the power, energy and movement in the wave.



### Unorthodox angles

I was hanging on to these tree roots, perched haphazardly over a steep drop, to take this image. My sole intention was to present a unique view of the tree. A concerned passer-by mistook my strange technique for distress and enquired whether I needed help!

Leica Q  
(Typ 116)Fujifilm  
X100T

# Premium compacts

Is the full-frame Leica Q (Typ 116) really worth its £2,900 premium price compared to the £840 Fujifilm X100T? **Andy Westlake** finds out

It is five years since Fujifilm announced its original FinePix X100 – a retro-styled compact camera with an APS-C sensor, fixed 35mm-equivalent f/2 prime lens, analogue control dials and a unique hybrid optical/electronic viewfinder. Despite all manner of operational quirks, its stunning image quality and sheer charisma meant that it instantly became a cult classic. The current third-

generation model, the X100T, uses the same formula, but now with a highly refined design that makes it as pleasant to shoot with as it is to look at.

Given the success of the X100T, it's perhaps surprising that no other manufacturer has really made a direct competitor. Nikon, Ricoh and Sigma have all built cameras with APS-C sensors and fixed prime lenses, but none of these has the built-in viewfinders or intuitive handling of the X100 series. However, earlier this year Leica came up with the closest yet, in the shape of its Q (Typ 116) compact. This sports a larger full-frame sensor, a 28mm f/1.7 lens,

traditional control dial operation and the best electronic viewfinder we've yet seen in any camera. But this comes at a price – at £2,900, the Leica Q costs almost four times as much as the £840 Fujifilm X100T.

Here at *WDC*, we love both cameras. Ever since we tested the Leica Q, though, we've been curious to see how it would measure up in a direct head-to-head comparison with the X100T. In principle, the Q's 24MP full-frame sensor should give noticeably better image quality than the X100T's 16.3MP APS-C sensor, both in terms of resolution and low-light performance. Equally, I'd expect the Q's 28mm f/1.7 Summilux



## Rangefinder-style design

Fujifilm's original X100 was strongly influenced by classic 35mm film rangefinders, and the Leica Q draws its design from the company's M-system cameras – arguably the most classic of them all. So it's no surprise that these two cameras are more similar than they are

different. Both have traditional control layouts, with shutter-speed dials on the top-plate, and aperture and focus rings on the lens barrel. However, while the Leica Q's manual-focus ring has a distance scale and hard end stops, the X100T's rotates continuously. The X100T also has an

exposure-compensation dial on the top, while the Q has an electronic dial in the same place that's used to change exposure compensation while shooting. Overall, both cameras give a broadly similar shooting experience, but the X100T has more external controls than the minimalist Q.



### Exposure compensation

The X100T has a dedicated dial, while the Q has an electronic dial in the same place. Both offer 33EV, in 1/3EV steps.

**Aperture ring**  
Both cameras click at 1/3-stop increments, and have an A position for auto setting.

### Viewfinder

The Leica Q has a high-resolution EVF, while the X100T uses a hybrid optical/electronic finder.

### Shutter-speed dial

Both work in 1-stop steps, with an auto position. On the X100T, intermediate speeds can be set using the rear dial.



lens to perform a bit better than the X100T's 23mm f/2, which makes some compromises to keep the camera's size down. The question is, though, how far do we have to push the cameras to see these advantages?

## Why choose a fixed-lens compact?

Before we go any further, let's consider why you might want such a camera in the first place. At first sight, restricting yourself to a single focal length might seem unnecessarily limiting compared to using a compact camera with a zoom lens. Indeed, with cameras like the Sony Cyber-shot DSC-RX100 series and Canon PowerShot G7 X combining fast zoom lenses with relatively large 1in sensors in a genuinely pocketable body, you could be forgiven for asking whether these cameras have rendered fixed-lens compacts obsolete.

The counter-argument is that cameras like the Fujifilm X100T and Leica Q encourage a different kind of creativity. The fixed lens means you may have to work a bit harder for your compositions, but its large maximum aperture allows creative use of shallow depth of field. The analogue control dials positively encourage you to experiment with your exposure settings, and a high-quality electronic viewfinder gives you the best possible preview of how your shots will work out. Almost as importantly, these cameras are wonderfully tactile objects that beg to be picked up and used.

## Other options

In this article, we've chosen to look at the Leica Q (Typ 116) and Fujifilm X100T because they both have prime lenses, traditional controls and built-in viewfinders. But there are

other cameras you might consider instead. The Nikon Coolpix A and Ricoh GR II both have fixed 28mm (equivalent) lenses and 16MP APS-C sensors in smaller, easier-to-carry bodies, but neither has a built-in viewfinder. The Sigma dp Quattro range gives exceptional image quality from top-quality 21mm, 28mm, 40mm and 75mm (equivalent) lenses and Foveon sensors, but the eccentric form factor and poor high ISO performance mean these cameras are something of a niche interest.

Perhaps the closest competitor to the cameras tested here is the Panasonic Lumix DMC-LX100, which has traditional controls and an electronic viewfinder, but with a fast 24-75mm (equivalent) f/1.7-2.8 zoom lens in front of a Four Thirds sensor with an effective resolution of 12.8 million pixels. It's a great option if you can't live without a zoom.

## Fujifilm X100T £840

WWW.FUJIFILM.CO.UK

The charismatic X100T is the third generation of Fujifilm's classic APS-C-sensor compact



- 1 On/off switch 2 Shutter speed dial 3 Exposure compensation dial 4 Function button  
5 Hotshoe 6 Aperture ring 7 Manual focus ring 8 Focus mode switch  
9 VF eye-sensor 10 Electronic dial 11 Quick menu button 12 VF mode lever

When it appeared in late 2010, the original FinePix X100 was Fujifilm's first camera for many years designed specifically for enthusiast photographers. Its successor, the X100S, added Fujifilm's unique X-Trans CMOS sensor and brought much-needed improvements in operational speed. The current X100T updates the physical design and control layout to match the company's X-system CSCs, resulting in an incredibly refined camera that just works exceptionally well.

Based around a 16.3MP APS-C sensor and 23mm f/2 lens, the Fuji X100T's standout feature is its advanced hybrid viewfinder that combines an optical viewfinder with a high-resolution EVF. This allows detailed exposure information to be projected into the optical finder, including a clever focus-confirmation window. Alternatively, you can use the 2.36-million-dot electronic finder, which gives an accurate preview of how your shots will work out.

The compact lens keeps the camera impressively slim, and is very sharp at longer subject distances. It's capable of focusing down to an impressive 10cm from the front element, although it's rather soft when used for close-ups at large apertures. A switchable three-

stop neutral-density filter is built in, and wideangle and telephoto adapters are available.

The camera's charismatic good looks are matched by its superb handling, with physical shutter speed, aperture and exposure-compensation dials encouraging creative shooting. Secondary functions can be accessed via the on-screen Q menu, and plenty of user customisation is on offer. On the back is a high-quality 3in 1.04-million-dot LCD monitor, which can of course also be used for composition and shooting, although it's not touch sensitive.

Other highlights include a silent electronic shutter option with speeds up to 1/32,000sec, allowing shooting at maximum aperture in bright light. Fuji's film-simulation modes give particularly attractive colours straight out of the camera, and in-camera Raw conversion allows you to tweak settings if necessary. There's a small built-in flash, and a hotshoe to accept more powerful units.

One quirk is that the camera can't accept filters directly, but requires an optional adapter that has a 49mm thread and provides a bayonet mount for a lens hood. This is useful as the lens can suffer from flare with oblique light.

## Leica Q (Typ 116) £2,900

WWW.LEICA.CO.UK

With its 24-million-pixel full-frame sensor and 28mm f/1.7 lens, the Q promises stunning quality



- 1 On/off switch 2 Shutter speed dial 3 Electronic-command dial 4 Movie record button  
5 Hotshoe 6 Aperture ring 7 Manual focus ring 8 Macro mode switch  
9 EVF eye-sensor 10 Four-way d-pad 11 Frameline selection button

The Leica Q takes all its design cues from the company's legendary M-series rangefinders, but behind its retro exterior it's a thoroughly modern camera.

Leica is best known for its iconic M-series rangefinder cameras, which have remained pretty much unchanged in terms of exterior design for 60 years. Its premium fixed-lens compact model, the Q (Typ 116), is strongly modelled after the M, with a conventional-looking focus ring and aperture ring around the lens, as well as a top-plate shutter-speed dial. Leica's signature rounded-end body design adds to the illusion.

Things aren't all as they at first appear, though, and rather than an optical viewfinder the Q employs a 3.7-million-dot EVF – quite simply the best we've seen on any camera to date. It's large, bright and high resolution, to the extent that it's easy to forget you're not using an optical unit.

Images are recorded using a 24MP full-frame sensor, with a sensitivity range of ISO 100-50,000. The 28mm f/1.7 optically stabilised lens is threaded for 49mm filters, and a rectangular metal hood is supplied which screws onto an outer thread. Rotating a dial on the barrel enters

macro mode, which allows focusing to about 9cm from the front of the lens. Image quality holds up very well, even at maximum aperture.

Manual focus is electronic rather than mechanical, but that doesn't stop the Q being one of the nicest cameras for manual focusing ever made. The focus ring is perfectly damped and the camera can be set to activate focus peaking and/or magnified view when it's turned. This, combined with the lens's relatively shallow depth of field, makes accurate focusing a breeze. If you'd rather use autofocus, this is fast, silent and almost invariably accurate, and the focus area can be set using the 1.06-million-dot 3in touchscreen.

Build quality is absolutely superb, leaving the X100T in the shade. With its aluminium top-plate and metal body shell, the Leica Q feels as solid as a rock – but with the weight to match. However, there's no doubt you're getting your money's worth in terms of materials and finish.

Where the Q feels a bit left behind, though, is secondary controls. With no on-screen quick menu and only two programmable buttons, I found that to access functions such as white balance and metering, I needed to use the main menu more than I'd like.

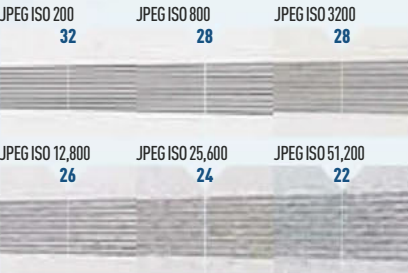


## Image quality

### Fujifilm X100T

#### RESOLUTION

With its 16.3-million-pixel sensor the X100T can record around 3,200 l/ph at low ISOs, with a particularly clean rendition of our test chart due to its X-Trans colour filter array. Resolution remains impressive through the standard sensitivity settings, dropping to around 2,800 l/ph at ISO 3200. At the extended settings of ISO 12,800 and above, though, quality deteriorates rapidly, due to excessive noise.



#### DYNAMIC RANGE

The X100T only records Raw files from ISO 200 to 6400, so we're only showing results in this range. Our Applied Imaging tests register 12.2EV at ISO 200, dropping only slightly by ISO 800. It maintains impressively high dynamic range at higher settings, reflecting the clean shadow tones that are characteristic of files from the X-Trans sensor.



#### NOISE

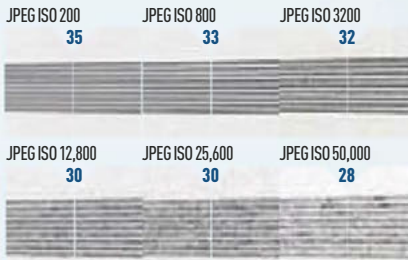
At low ISO sensitivities, the X100T gives very attractive images, with plenty of detail and a very likeable colour rendition to its JPEG output. It does very well as the sensitivity setting is raised too, with low-contrast detail only starting to deteriorate at ISO 3200, and colours holding up well. Beyond this things break down fast, with ISO 12,800 only barely usable.



### Leica Q (Typ 116)

#### RESOLUTION

At around 3,500 l/ph at ISO 100, the Leica Q out-resolves the X100T just as we'd expect, but its Bayer sensor array means that colour moiré is a bit more prevalent. However its full-frame sensor means that noise doesn't have too big an impact as the ISO is raised, and we still see around 3,200 l/ph at ISO 3200 in these tests. Even at ISO 50,000 the Q still resolves 2,800 l/ph, as judged from our test chart.



#### DYNAMIC RANGE

The Leica Q's full-frame sensor offers superb dynamic range, with a reading of 12.6EV at ISO 100 in our Applied Imaging tests. The result is exceptionally malleable Raw files with lots of shadow detail recoverable from Raw files at low ISOs. Raising the sensitivity sees a monotonous fall, with very low results at the top two ISO settings.



#### NOISE

The Leica Q gives stunningly detailed noise-free images at ISO 100, and maintains its excellent quality as the sensitivity is raised. There's a little noise visible at ISO 3200, but it's not remotely problematic, and even ISO 12,800 is entirely usable for smaller output sizes. Beyond this, noise has a more destructive impact, and ISO 50,000 should be avoided.



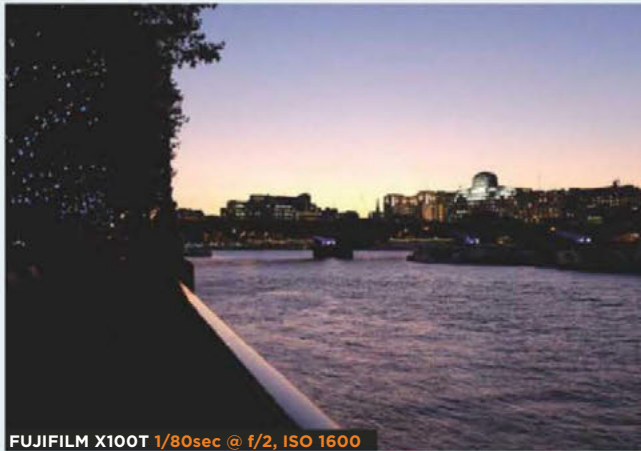
## Comparisons

	Fujifilm X100T	Leica Q (Typ 116)
CONNECTIVITY	Fujifilm's Camera Remote app for iOS and Android allows both image sharing and remote control. However, the available settings are limited and unintuitive to use.	The Leica Q app for iOS and Android allows remote control with live view, touch focus and access to all camera settings. You can also download images to your phone.
ELECTRONIC SHUTTER	The electronic shutter has to be enabled in the menu and gives speeds up to 1/32,000sec. Turning it on disables the flash and extended ISO settings.	With speeds up to 1/16,000sec, the electronic shutter kicks in automatically when needed. High speeds can be set manually using the electronic top dial.
BATTERY LIFE	The NP-95 battery is rated for 330 shots per charge. An external charger is supplied, and the battery can also be charged using the Micro USB port.	The BP-DC12 Li-ion battery has a 1,200mAh capacity, and is charged externally. I was usually able to get a couple of hundred shots per charge.
VIDEO	Full HD 60fps video is available, with full manual control over exposure settings. But there's no image stabilisation so handheld footage will be jittery.	While full HD 60fps video is on offer, there's no manual control over exposure. The stabilised lens evens out camera shake during handheld recording.

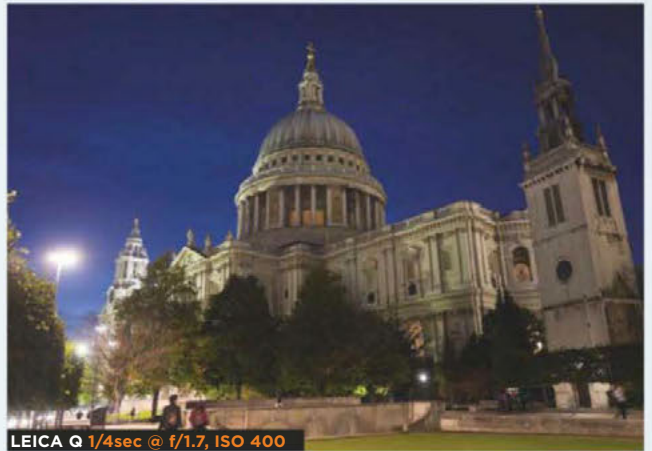
## KEY SPECS

	FUJIFILM X100T	LEICA Q (TYP 116)
Sensor	16.3MP, APS-C X-Trans CMOS II	24MP, full-frame CMOS
Output size	4896 x 3264	6000 x 4000
Focal-length magnification	1.5x	1x
Lens	23mm f/2	28mm f/1.7
Shutter speeds	200-6,400 (Raw), 100-51,200 (JPEG)	100-50,000
Metering system	Multi, spot, average	Multi, spot, average
Exposure compensation	33EV (0.3EV steps)	33EV (0.3EV steps)
Drive mode	8fps	6fps
LCD	3in, 1.04 million dots	3in, 1.04 million dots
Viewfinder	Hybrid optical/2.36-million-dot LCD	3.68-million-dot LCOS
AF points	49	169
Video	Full HD 60p	Full HD 60p
External mic	2.5mm stereo	No
Memory card	SD, SDHC, SDXC	SD, SDHC, SDXC
Power	NP-95 Li-ion	BP-DC12 Li-ion
Dimensions	126.5 x 74.4 x 52.4mm	130 x 80 x 93mm
Weight	440g	640g

## Real-world comparisons



FUJIFILM X100T 1/80sec @ f/2, ISO 1600



LEICA Q 1/4sec @ f/1.7, ISO 400

### LOW-LIGHT SHOOTING

With its 23mm f/2 lens and eminently usable ISO 3200, the X100T is no slouch in low light. But with no IS, you'll

often need higher ISOs compared to the Leica Q. The Leica Q's combination of 28mm f/1.7 lens, optical stabilisation and full-frame sensor makes it a low-light

monster. I was able to get sharp results handheld at a shutter speed of 1/4sec, which allowed me to shoot after dusk using ISO 400.



FUJIFILM X100T 1/3200sec @ f/2, ISO 200



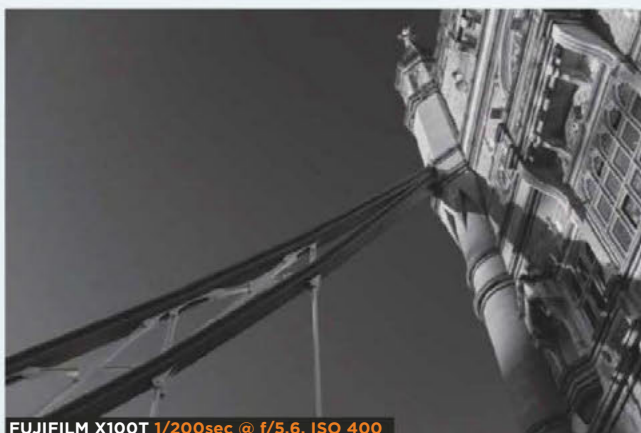
LEICA Q 1/60sec @ f/11, ISO 1600

### CLOSE-UPS

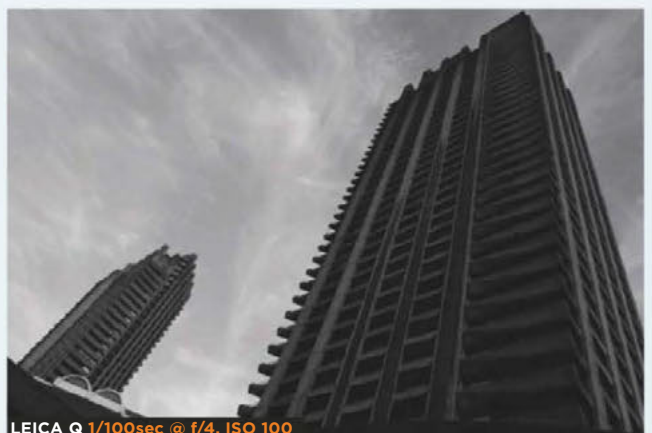
While the X100T's 23mm f/2 lens can focus within 10cm in its macro mode, results are soft at large apertures. It

needs to be stopped down to f/5.6 for sharp results. On the Leica Q you're required to twist a ring on the lens barrel to engage macro mode. Doing so will allow you to

focus within 17cm of a subject, but the maximum aperture is then limited to f/2.8. Results from our macro testing were excellent.



FUJIFILM X100T 1/200sec @ f/5.6, ISO 400



LEICA Q 1/100sec @ f/4, ISO 100

### COLOUR MODES

The X100T includes Fuji's film-simulation modes, which mimic classic films and give superb colour output in its JPEGs (my favourite is the 'Astia/Soft' setting). It also has several black & white modes,

which mimic different yellow, red and green lens filters. It's quick and very straightforward to change modes in the menu.

With the Q, Leica has radically improved its JPEG processing compared to its previous cameras, and

simplified its colour modes in the process. The default standard mode gives attractive, fairly neutral output, and saturation can be adjusted in five levels. There's also a really nice monochrome mode, but it takes a lot of button pressing to turn it on or off.



## 28mm, 35mm and 50mm views: adapters vs crops

The Leica Q and the Fujifilm X100T are both fixed-lens cameras, but the different angles of view lend themselves to different purposes. With its 28mm lens, I found that the Leica Q was especially well suited to landscape, architecture and interior shooting. The X100T's narrower 35mm-equivalent view is better suited to shooting subjects such as street photography and people.

However, both cameras also give the option to go beyond the lenses' native angles of view (28mm and 35mm-equivalent respectively), but use distinctly different approaches. The Leica Q relies on cropping into the image, while the X100T can accept matched wide and tele-lens adapters. So what's the practical difference?

On the Leica Q, two crop modes are available: 1.25x to give a 15.4MP, 35mm-equivalent image, and 1.8x to give a 7.5MP, 50mm-equivalent image. By default, pressing the unlabelled button on the camera's back beneath the shutter button cycles through them, with the active field of view marked by rangefinder-style framelines. This may seem like an affectation, but it's a good way of indicating that you're in a crop mode, especially as this only applies to JPEG output – Raw files are still recorded as full 24MP, 28mm shots. However I'd still like to see the option of cropping in and filling the viewfinder with the active area.

For the X100T, Fujifilm makes the matched WCL-X100 wideangle adapter and TCL-X100 telephoto adapter, which cost £270 and £200



Fujifilm's optional TCL-X100 adapter costs £200

respectively. These screw directly onto the front of the lens, but you'll have to remove the thread's cosmetic cover ring first (or the filter adapter, if you're using it). This makes mounting and removing the adapters a slow process, meaning you're less likely to use them. It's also important to tell the camera that you're using the adapter, in order to get properly corrected images. This is done via the shooting menu, but can be assigned to an Fn button or added to the Q menu if you prefer.

While the Leica Q's 7.5MP image at the 50mm crop setting should be sufficient for an A4 print, it clearly won't match the X100T using the TCL-X100 converter. However, the Leica Q's 35mm crop setting is a close match for the X100T in terms of image quality and recorded detail, and at 28mm it performs better than the X100T with a wide converter. So, if you want the option of shooting at 50mm a lot, the X100T would be the better choice – otherwise the Leica Q has the edge.

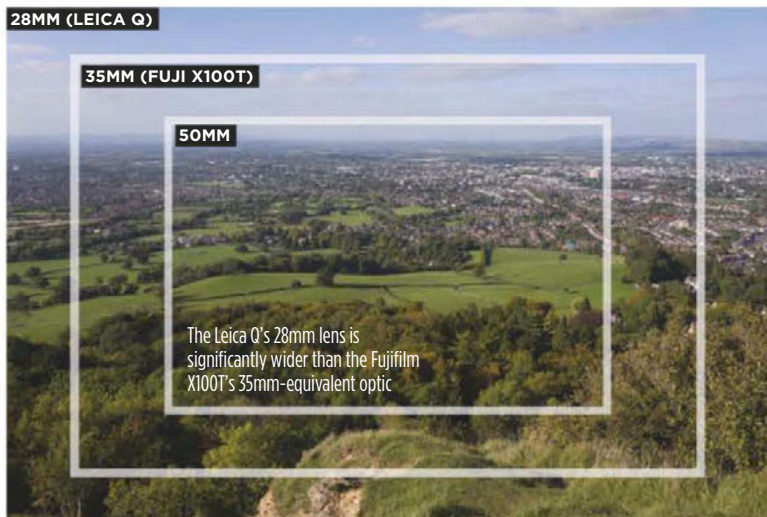
## Verdict

I've long been a fan of Fujifilm's X100-series cameras, for their combination of handsome good looks, superb handling and excellent image quality. However, ever since I first saw the Leica Q, I've been itching to compare them side-by-side. Because the X100T is so good – and at £840, already an extravagant purchase for most photographers – it seems impossible to believe that spending the extra money for the Leica could make any sense, no matter how lovely it might be. Indeed, for the price of the Leica Q you could buy yourself a silver X100T with its hood and adapter ring set, plus wideangle and telephoto converters, and still have enough money left to buy them all over again, but this time in black.

After spending a couple of weeks shooting the two side-by-side, though, I can genuinely see the point of the Leica Q. While the firm's APS-C-sensor compacts have struggled to match the X100 series, the Q is a better camera in almost every way. This goes beyond the headline specs of the 24MP full-frame sensor, 28mm f/1.7 lens and 3.7-million-dot electronic viewfinder. It's even better built and lovelier to hold and use, and the viewfinder is the best I've seen. Indeed, I hope Leica soon use it on a camera that can accept M-mount lenses.

That's not to say that the X100T doesn't have its own advantages. It's slimmer and easier to carry around, and can be slipped into a coat or jacket pocket where the Leica Q will always need a bag. The X100T's more extensive external controls and Quick menu also eliminate the menu diving that can be needed on the Leica Q, and I prefer having a dedicated exposure compensation dial. The X100T's built-in ND filter is also very useful for shooting in bright light, and of course there's that clever hybrid viewfinder. In fact, for most photographers it's the more sensible choice.

Overall, though, I can't help but think that almost any photographer who likes the X100 series will instantly fall in love with the Leica Q. It's the best digital camera the company has ever made, and packed full of class-leading technology. In some respects it still feels first generation – for example, it's crying out for an on-screen Quick menu – but with its stunning design and image quality, it has to be one of the most desirable cameras on the planet right now, although at a price.



This entry-level DSLR competes with CSCs in terms of size

## Nikon D3300

WWW.NIKON.CO.UK

Launching an entry-level DSLR is increasingly brave these days. Sales of Compact System Cameras are on the rise, while point-and-shoot compacts are suffering due to smartphones getting more sophisticated. As a result, the path from compact to DSLR is no longer clear cut, causing some manufacturers to invest their energies elsewhere. If you're going to bring an entry-level DSLR onto the market in this climate, it needs to be special.

The Nikon D3300 was released in 2014, and offers a 24.2MP DX-format CMOS sensor (paired with an EXPEED 4 processor), Full HD video, and a collapsible 18-55mm kit lens for creating 'share-worthy' images. Unfortunately, many of these images are destined to remain on the memory card, as the D3300 has no built-in Wi-fi functionality – to solve this Nikon offers the WU-1a, an external wireless adapter.

With a relatively lightweight body and a price tag that doesn't require deep pockets (£599.99 at launch) the D3300 was, and still is, a rather attractive prospect. Battery life is 700 shots – enough for even the most trigger-happy snapper – and the frame rate is an impressive 5fps.

Naturally, a camera at this price point will have a few omissions, and an articulated LCD screen and touchscreen controls are among them. More troubling, however, is the level of noise apparent at ISO settings as low as 1600 (a



LAUNCH  
PRICE

£599 WITH 18-55MM KIT LENS

CURRENT  
PRICE

£329 WITH 18-55MM KIT LENS

problem caused by cramming so many pixels onto an APS-C sensor). Sure, a few years ago we would have been thrilled if sensor sensitivity even reached as high as 1600, but

technology has moved on.

On the plus side, removing the anti-aliasing filter has allowed the sensor to capture an impressive level of detail, resulting in sharp images with natural colours, and a good level of information in shadows and highlights. If you're after great image quality at an affordable price, the D3300 should still be on your shortlist.

## What our test said

'The entry-level DSLR market has come under pressure in recent times, with CSCs competing in terms of size and increasingly impressive specification.

However, the Nikon D3300 is a good example of what entry-level DSLRs still have to offer. Design improvements mean that this model is smaller than ever, and it also features the optical viewfinder many feel is missing from CSCs.

The D3300 has a 24MP sensor, with no anti-alias filter, resulting in a level of detail that exceeds that of a lot of rival DSLRs and CSCs. It's not all good news though, as high resolution on an APS-C sensor means noise becomes an issue at lower ISO settings than might be desirable.

There's also the fact that the D3300 lacks built-in Wi-fi functionality, although this is probably understandable owing to the low price tag.'

### PROS

- 24.2MP sensor captures bags of detail
- Relatively light body • 1920 x 1080 HD video • Battery life

### CONS

- No built-in Wi-fi • Fixed LCD
- No touchscreen elements
- Noise evident at ISO 1600

Camera  
GOLD

## How it stacks up today

The D3300 was intended as an update to the D3200, which was released in 2012 and is still widely available. It follows a number of successful entry-level models from Nikon, and is likely to be replaced in the near future.

## Alternatives

The Canon EOS 1200D boasts 18MP, a continuous frame rate of 3fps, full HD video, a 3in LCD screen, and a 9-point AF system. Alternatively, the Pentax K-500 offers a 16MP sensor, a continuous frame rate of 6fps, full HD video, a 3in LCD screen, a viewfinder with 100% coverage, and an 11-point AF system.

## In the range

How the D3300 fits in the range



## KEY SPECS

**SENSOR** 24.2MP CMOS  
**ISO** 100-12,800 (25,600 extended)  
**BURST MODE** 5fps  
**MOVIE** Full HD 1920 x 1080  
**DISPLAY** 3in, 921k-dot TFT LCD (fixed)  
**DIMENSIONS** 124 x 98 x 75.5mm  
**WEIGHT** 460g (with battery and card)





# The Nikon D3300 Two users give their verdicts

## Anthony Fletcher

SHEFFIELD

My interest in photography really took off thanks to digital, and I shoot predominantly with a Nikon D90, Nikon D7100 and most recently Nikon D3300. I tend to use the D90 as an event camera, the D7100 for portraits and now the D3300 when I don't want to carry the weight of the others. I can still rely on it capturing me a good image.

The Nikon D3300 is my everyday camera, but it's more than just an entry-level model. Its specifications can be found in more advanced cameras, and will produce exactly what you want whether you're experienced or a beginner. Generally, I shoot in manual mode and Raw, using Lightroom in post-production to obtain the image I visualised at the time of shooting.

The menu system is easy to navigate. I feared that it might be an issue, but thankfully it is straightforward to use.

The 11-point focus system might seem limited compared with the D7100's 51, but I've never encountered any problems with locking AF/AE and recomposing.

The ISO increment settings aren't as refined as in the more sophisticated models, but this isn't a problem.

The screen is superb for quickly reviewing your images and it holds up very well when zooming in to check focus.

I've mainly used the 18-55mm kit lens with this camera, which is a very good all-round lens. I've used it for indoor shots at ISO 1600 and above, and it produces very usable images. I also use the Nikkor 40mm f/2.8 micro.

**Permajet says:** 'Anthony's eclectic style would suit PermaJet Oyster 271, which delivers sharp and vibrant prints no matter what the subject.'

[WWW.FLICKR.COM/PHOTOS/TONYFLETCHER](http://WWW.FLICKR.COM/PHOTOS/TONYFLETCHER)



### 1 College pillars

Taken on a trip to Cambridge. The symmetry of the columns appealed to me. Nikkor 18-55mm at 18mm, 1/30sec @ f/7.1, ISO 200

### 2 Chatsworth House

Chatsworth House in Derbyshire is a great location for photography, both inside the house and out. Nikkor 18-55mm at 22mm, 1/15sec @ f/5, ISO 1600, handheld

### 3 Wildflower

I enjoy playing with shallow depth of field to guide the viewer's eye to a particular part of the frame. Nikkor 40mm f/2.8 Micro, 1/200sec @ f/16, ISO 200



# Graham Pargeter

CONSETT

I bought my first SLR, a Ricoh KR10 Super, in the early 1980s to photograph my baby daughter. I soon found that I enjoyed photographing people and landscapes. I live on the County Durham/Northumberland border, so there are many photographic opportunities.

After moving on to Nikon in the 1990s, I progressed to Nikon digital in 2004 and achieved an LRPS distinction in 2008. As I suffer from a painful spinal condition, I find it difficult to carry around a heavy DSLR, so I bought the D3300 as it was lighter than my D300s. The difference was amazing. The camera is well balanced with my 150-500mm lens.

I was a little worried about the image quality from an entry-level camera, but I really needn't have been. Images are especially sharp as there is no low-pass filter, they have good colours and very little noise, so shooting wildlife in low light at ISO 1600 is no problem at all. I always shoot Raw using Aperture Priority mode. I process in Lightroom 5 and PS Elements 13.

I recently did an all-night shoot in London and the D3300 performed brilliantly. I opted to use the kit lens (18-55mm), which kept the weight down and this performed admirably.

I would have liked the D3300 to have had a weather-sealed body and I am not convinced by the tiny red lights marking the focus points in the viewfinder. However, the D3300 is an excellent DSLR for those starting out in photography and one which also has lots to offer the more experienced photographer.

**Permajet says:** 'PermaJet FB Gold Silk 315 paper has a naturally warm base tint that would perfectly suit Graham's images.'



WWW.FLICKR.COM/PHOTOS/SAXMAN1597

## 1 Girl with a B17

This costume demonstrator at Duxford was happy to pose for me with the B17 'Sally B'/'Memphis Belle'. Nikon 18-300mm f/3.5-5.6 at 35mm, 1/2000sec @ f/8, ISO 1600

## 2 Three girls and a Spitfire

The Manhattan Dolls were performing WW II songs at Duxford. I really liked the period look of the uniforms, and the real Spitfire in the background completed the shot. Nikon 18-300mm f/3.5-5.6 at 52mm, 1/1250sec @ f/8, ISO 1600

## 3 Seed pod

Taken at Washington Wetlands Centre, Tyne-And-Wear. I really like the 'gritty' feel of the monochrome. Nikon 18-300mm f/3.5-5.6 at 300mm, 1/1600sec @ f/8, ISO 1600







Each featured reader receives a **£50 PermaJet voucher**.



PermaJet provide award winning digital photographic paper and accessories to help you print to perfection at home, every time. The comprehensive range of inkjet papers include the high quality daily essentials of Gloss, Oyster and Matt and heavyweight Fine Art collections of textured and smooth surfaces. Receive leading levels of support and FREE ICC profiles for all PermaJet media, making your memories last a lifetime.



[www.permajet.com](http://www.permajet.com)

# Advice for a newcomer

NOVICE CHRIS

**Q** I'm new to photography. I've been looking at cameras for a while now and I'm thinking of getting the Nikon D3300. It's a good price, isn't too complicated for my needs, and appears to get good reviews.



A long zoom such as the Sigma 18-250mm is ideal for wildlife

However, I'm not sure about lenses. I'd like to take wildlife/nature shots while I'm out walking. I'd like to photograph pheasant shoots, too, with gun dogs working and retrieving, and horses doing cross-country. A friend recommended an 18-105mm lens, but I think I might need a little more reach than 105mm. What would you recommend? I'd like a lens with a weather-tight seal.



You will probably need an 18-200mm or similar – for example,

Sigma has an 18-250mm and Tamron has 18-270mm and 16-300mm models. Nikon's own offerings include an 18-200mm and an 18-300mm. Nikon's two lenses have a dust seal at the

lens mount, but neither the D3300 nor any of the lenses listed above are properly dust and moisture sealed like higher-end 'pro' bodies and lenses. A single lens with such a wide-ranging zoom is likely to be ideal for your use, but don't expect outstanding image quality, because such lenses delivering such a big focal length shift are also optical compromises. The long end of the zoom range will also be relatively dark, so you should consider a higher ISO setting for a faster shutter speed, as well as engaging image stabilisation mode to avoid your pictures being spoiled by camera shake. **IB**

**Turn to p48 to learn more about the Nikon D3300**

## Smartphone cameras: good enough?

SERENA MALCOLM

**Q** I am sure you are this asked all the time, but I am about to get a new phone, and this summer I am planning to go on an extended holiday, touring the US around California, Nevada, Arizona and Utah. I'm told that my new phone should be pretty good for taking photos (it's a Microsoft Lumia 950). The question is, will it be good enough for my trip of a lifetime? Or should I get a dedicated camera? I have set aside a lot for the trip so I don't really want to spend much more on a camera if I can help it.



**A** The Lumia 950 is certainly one of the best smartphone cameras, thanks to its Nokia-developed PureView cameraphone technology – it's also 4K capable. But even so, the digital zoom capability of the phone is limited to 3x and the resolution drops dramatically at the 3x setting. Personally, I'd seriously recommend getting a decent travel zoom camera such as the Panasonic Lumix DMC-TZ60, which has a 30x optical zoom so you can really bring distant details closer. It has GPS and Wi-fi, too, but Panasonic doesn't support Windows Phone with a companion app, unfortunately. **IB**

# Decisions, decisions...

J FARNSWORTH

**Q** It's time to upgrade from my ageing Panasonic Lumix DMC-G3. I am currently torn between the Olympus OM-D E-M10 II and the Panasonic Lumix DMC-G7. I will keep my Panasonic 14-42mm lens; I also have a 100-300mm Panasonic zoom and an Olympus m.Zuiko 45mm f/1.8. My interests are fairly wide-ranging – everything from wildlife and travel to portraits and general family snaps. I'm interested in the Olympus in-body stabilisation system because on a Panasonic body the 45mm lens is not stabilised. There are other Olympus lenses I'm interested in purchasing at some point in the future, and they'd work better with the stabilisation system. But 4K Photo on the G7 also looks interesting. I really need a shove in the direction of one or the other!



All your lenses will work with both the E-M10 II and the G7, and, as you have pointed out, the 45mm m.Zuiko will benefit from Olympus's revered 5-axis in-body image stabilisation, while it would remain un-stabilised on the G7. But if you are interested in video, then Panasonic has more to offer, especially with 4K video to future-proof things. Shooting 4K still is very interesting and can be a game-changer under certain circumstances where just one or two frames in a 30fps clip could stand out. You get an 8MP still from 4K and the quality is not bad at all. Panasonic has endowed the G7 with some user interface tools for shooting

and selecting 4K frames from a stills perspective, but it's still early days in this area. One key area in which the G7 beats the E-M10 is with its proper side-hinged articulating screen, while the E-M10 makes do with an up/down tilting screen. As for the E-M10, apart from its endearing OM retro styling, it feels more solid. Both deliver comparable image quality. Your best bet is to handle them both at your friendly local camera store. **IB**



If you're interested in shooting video, the G7 has more to offer



# What are the advantages of Micro Four Thirds?

GEOFF HARPER

**Q** I am a long-time Pentax user, and I currently have a K10D. I am trying to work out where to go from here. I could upgrade to another Pentax, but a friend has been singing the praises of his Micro Four Thirds gear, which seems very compact and light. His pictures are good, too, and as I am now getting on a bit I can really appreciate a lighter and less bulky kit bag. I do have some worries, though, particularly concerning low-light image quality. I am also confused about how Micro Four Thirds lens focal lengths compare to my Pentax lenses on my K10D. I mainly shoot landscapes and architecture as well as travel photography, and I enjoy taking night scenes.

**A** *Micro Four Thirds is the most established of the new generation of mirrorless Compact System Cameras, launched by Panasonic in 2008 and joined by Olympus the following year. The two companies, as well as independents, have since built up an impressive range of bodies, lenses and accessories. In the early days, they did lag behind the competition in terms of sensor performance, particularly in low light, but that's much less of a concern these days. By having a relatively small sensor, the cameras and lenses can also be impressively small and light. Your Pentax uses an APS-C format*



*sensor. This means it is wider in format (3:2 ratio) than Micro Four Thirds, which is more square at 4:3. The relative sensor sizes mean a cropping factor compared to full frame of 1.5 for your Pentax and 2 for Micro Four Thirds. This means an equivalent to a 24mm wideangle lens, for example, is  $24/1.5 = 16\text{mm}$  for your Pentax and  $24/2 = 12\text{mm}$  for Micro Four Thirds. If you really need to push your ISO to its limits then the best APS-C sensors continue to have more latitude than Micro Four Thirds, but in practice Micro Four Thirds photographers are able to produce excellent low-light and landscape images. **IB***

# Printing choices

ART SIMMONDS

**Q** It's been a couple of years since I started taking my photography a bit more seriously and I have a collection of images that I'm particularly proud of. One thing I haven't done in all this time is to get any of my shots printed – not even to postcard size. They have simply been uploaded to Facebook or Flickr. Therefore, I am thinking about buying a printer. Is this the right way to go? I don't see many articles in the mags about printers and most of my friends seem to simply use online services, mostly to get photo books made. But I am interested in framing some of my shots, so I'd ideally like to get prints up to A3 in size or even bigger. Should I print my own or should I get someone

else to print them for me? If I decide to get a printer, what would you recommend?

**A** *There is no doubt that printing photos yourself is now no longer fashionable. However, that doesn't make it wrong. While online photo printing services are better than ever and are often very cost-effective and versatile, if you are really serious about your photography you will, inevitably, want to exercise full control over your photo printing and enjoy the benefit of being able to produce prints of any size variation in minutes rather than having to wait for the postie. For best ink-cost efficiency, especially if you end up printing a lot, you should invest in a more*

*expensive printer with large ink tanks. Never use third-party refilled ink tanks; they could, at worst, damage the print head in your printer or at the very least cause problems with colour accuracy and consistency. I'd recommend you go for a printer that uses pigmented inks rather than dye-based inks, as dyes fade much more quickly and dye inks don't work well on fine art papers. All this points to either a Canon or Epson A2 semi-professional photo printer, such as the Canon imagePROGRAF iPF5100 (around £900) or Epson's Stylus Pro R3880 for around the same price. If you can't justify these, you can consider the Epson's A3+ Stylus Photo R2000 or Canon's A3+ PIXMA PRO-10S. **IB***

GOT A QUESTION?  
DROP OUR EXPERTS A LINE

[WDC@TIMEINC.COM](mailto:WDC@TIMEINC.COM)

[WWW.FACEBOOK.COM/WHATDIGITALCAMERA](http://WWW.FACEBOOK.COM/WHATDIGITALCAMERA)

[@WHATDIGCAMERA](https://twitter.com/WHATDIGCAMERA)

[WWW.FLICKR.COM/GROUPS/WHATDIGITALCAMERA](http://WWW.FLICKR.COM/GROUPS/WHATDIGITALCAMERA)

[WWW.WHATDIGITALCAMERA.COM/FORUMS](http://WWW.WHATDIGITALCAMERA.COM/FORUMS)

**WHAT DIGITAL Camera**

Blue Fin Building, 110 Southwark Street,  
London SE1 0SU 020 3148 4138  
Email: [wdc@timeinc.com](mailto:wdc@timeinc.com)  
Website: [www.whatdigitalcamera.com](http://www.whatdigitalcamera.com)

## EDITORIAL

**Group Editor** Nigel Atherton  
**Managing Editor** Ailsa McWhinnie  
**Art Editor** Simon Warren  
**Production Editor** Jacqueline Porter  
**Technical Writers** Michael Topham, Andy Westlake, Richard Sibley, Phil Hall, Jon Stapley, Callum McInerney-Riley, Nigel Atherton, Max Parker  
**Books** Oliver Atwell  
**Product Photography** Andrew Sydenham  
**Help Expert** Ian Burley  
**Contributors** Audley Jarvis, Karen McDonald, Tom Calton, Tracy Hallett, Mark Higgins, Jason Theaker, Luke Massey, Damien Demolder  
**Cover image (Animal Magic)** by Luke Massey

## PUBLISHING & MARKETING

**Managing Director** Oswin Grady  
**Publishing Director** Alex Robb  
**Senior Marketing Manager** Samantha Blakey 020 3148 4321  
**Online Manager** Karen Sheard

## ADVERTISING

**Sales Manager**  
Felix Barlow 020 3148 2508  
**Account Manager**  
Simon Gerard 020 3148 2510  
**Production Co-ordinator**  
James Wise 020 3148 2694  
**Classified Sales Enquiries**  
020 3148 2508  
**Inserts** Innovator 020 3148 3710  
**Repro by** CC Media Group Ltd  
020 8523 6700  
**Printed by** The Polestar Group  
Distributed by Marketforce,  
5 Churchill Place,  
London E14  
020 3787 9001

## SUBSCRIPTIONS

One year subscription (13 issues) -  
UK £58.60; Europe/Eire €100.99;  
N. America \$130.99; Rest of World £85.99.  
For subscription enquiries from the UK  
please call 0844 848 0848 and from  
overseas please call +44 (0)330 3330 233  
or e-mail: [ipcsubs@quadrantsubs.com](mailto:ipcsubs@quadrantsubs.com)

## BACK ISSUES

£4.50 each from: Back Issues Department,  
PO Box 772, Peterborough PE2 6WJ.  
Tel 01733 385170.  
Website [www.mags-uk.com/ipc](http://www.mags-uk.com/ipc)

## TEST REPORTS

Contact OTC to get copies of camera test reports published in WDC. Tel 01707 273773

## TIME INC. (UK) LTD

What Digital Camera™ is published by Time Inc. (UK) Ltd, Blue Fin Building, 110 Southwark Street, London SE1 0SU. Time Inc. (UK) Ltd reserves the right to use any submissions sent to What Digital Camera in any format or medium, including electronic.

What Digital Camera™ is a trademark of Time Inc. (UK) Ltd  
© 2016 Time Inc. (UK) Ltd ISSN No. 1366-5324

## Canon-to-Alpha 7R II adapter

ROB ASHINGTON

**Q** I am thinking of switching from my Canon EOS 5D Mark III to a Sony Alpha 7R II because I understand that I will be able to keep some of my Canon EF L-series lenses and use them via a mount adapter on the Sony, even to the extent that AF will still work. Do you have any advice on which mounts to consider?

**A** The Alpha 7R II works quite well with Canon EF lenses using an appropriate adapter. The best known comes from Metabones, but costs over £300. It's really well made, but the alternatives are much cheaper – typically between £60 and £80 – from brands such as Fotodiox, Commlite and Viltrox. Of these cheaper versions, the Commlite seems to get the best user feedback and one reviewer suggested it was even a better choice than the mega-expensive Metabones adapter. But do be prepared for some focusing foibles if feedback is a good guide. In-lens optical image stabilisation is supported if required. **IB**



The Metabones adapter is well made but costs £300; cheaper options can be just as good

## The eternal DSLR or CSC dilemma...

AMOUNTER

**Q** I'm trying to decide between the Canon EOS 7D Mark II and the Fujifilm X-T1. Should I go with a DSLR or a CSC? How do these two cameras compare?

**A** It depends on your needs, as these two cameras are really designed for different applications. The Canon EOS 7D Mark II is well suited to action photography with its accomplished AF system and high-speed frame-to-frame shooting capability. It's also



The X-T1 is more suited to street than the Canon

capable of surviving in less-than-hospitable outdoor conditions. The Fujifilm X-T1 is much more suited to landscapes, street photography and studio work. I wouldn't choose the X-T1 over the 7D for wildlife or motorsport, say. **IB**

## Switching from Canon EOS EF-S to EOS M

ELLIE DRAKE

**Q** I use a Canon EOS 450D and a couple of lenses. I'm now interested in travelling lighter with a more modern camera, so am considering changing to a Canon EOS M10. However, I am a bit confused about how my old lenses would work with the new camera and the differences in the way the focusing might function. What are the main issues of switching from a 450D to an M10, please?

**A** Canon EOS M camera bodies can use most Canon EF or EF-S mount lenses, but they do require an adapter and depending on the M body they are used with they may not focus as swiftly as with your 450D. The primary reason an adapter is required is that an M body lens mount is closer to the sensor than on a SLR body like your 450D. This is because there is no SLR mirror box separating the lens and the sensor. Canon's adapter is called the Canon Mount Adapter

EF-EOS M, and costs just under £100. Alternatives can be sourced for as little as £20. The reason why there are differences in focusing performance when using older lenses on M bodies is that SLR lenses were primarily designed to focus fast to a point determined by a phase detect range-finding focus system. Early M-series bodies were slow to focus anyway, but even so, Canon EF/EF-S SLR lenses are not optimised for use with M-body live view and, especially, video shooting. This is why Canon developed STM (stepper motor) lenses fully optimised for the M system. EOS-M lenses are usually smaller and lighter than equivalent SLR lenses which is a by-product of not needing a mirror box. **IB**



You'll need an adapter if using EF or EF-S lenses with the EOS M10

## Next month



© LEE FROST

### Master mono

Learn to see the world in black & white, and your photography will benefit

### Fujifilm X-Pro2

Fuji's flagship CSC is upgraded with a higher-resolution 24MP sensor and a range of new features



### Tamron 14-150mm lens

The only third-party zoom for Micro Four Thirds cameras

### Smartphone photography

Forgot your 'real' camera? We reveal how to make the most of your phone's features

### Plus:

Master your Camera, Portfolio, Expert guide, Help – and all our regular features

**On sale**  
11th March



# Say cheese to our camera equipment insurance

**WIN**  
**A VANGUARD BAG!**  
Every new policy will be entered into a draw to win 1 of 10 Vanguard bags



**Amateur Photographer**  
Insurance Services

## Insure your camera and accessories today!

### COVER INCLUDES

#### ● **Accidental damage**

Up to £25,000 worth of cover for your camera, equipment and accessories

#### ● **Theft**

Cover for theft of your camera, equipment and accessories including from a vehicle

#### ● **Hire in the event of a claim**

Hire cover included as standard whilst we replace or repair your camera

#### ● **Full Worldwide Cover**

UK residents only required to be in the UK for 1 day in any period of insurance

#### ● **Low excess**

Standard excess only £50

#### ● **New for old replacement**

New for old on your specific camera available, including vintage or rare items

#### ● **Public liability**

Protection for you against damage to another person or their property

#### ● **Personal Accident**

Optional cover available to protect yourself when using your camera or equipment

#### ● **Mechanical Breakdown**

Option to add Mechanical Breakdown cover on items purchased from new less than 5 years ago

\* Mon to Fri 9am to 6pm

Call now **0844 249 1902\***  
[www.amateurphotographer.co.uk/apprintad](http://www.amateurphotographer.co.uk/apprintad)

# Into the wild

With stunning nature documentaries currently gracing our screens, wildlife photographer and cameraman Luke Massey gives his top tips on getting into wildlife photography

WORDS AND PICTURES [LUKE MASSEY, WWW.LMASSEYIMAGES.COM](http://www.lmasseyimages.com)

Wildlife photography; it sounds so glamorous. Witnessing amazing sights, going to incredible places and spending hours watching stunning creatures going about their business while doing your best to get a photograph that does the encounter justice.

It is, in my opinion, one of the best careers or hobbies anyone could choose. What could be better than exploring the wilds (both rural and urban) in search of nature? I read a wonderful quote recently: 'You should sit in nature for 20 minutes a day – unless you're busy, then you should sit for an hour.'

Within the UK and further afield there are countless opportunities and now is as good a time as any to start. Equipment has become more affordable; you can start with anything

from bridge cameras to DSLR set-ups. You can specialise, too – not everything needs to be shot with a bazooka-like telephoto, so why not go for something a bit different by shooting wildlife with a wideangle or get up close and personal with macro lenses?

Wildlife isn't easy. Yes, sometimes opportunities will be put right in front of you, but at other times you'll need hours of patience for that one moment. Ethics are key, from how you approach and treat your subject to how you tell the story behind your photo, allowing full disclosure. A lot is down to your own judgement.

Over the course of this feature, I hope I'll be able to give you some helpful hints, advice and guidance on ways in which you can improve your wildlife photography.



The European rabbit is widespread and a great starter subject. Canon EOS-1D Mark IV, 500mm with 1.4x converter, 1/200sec @ f/5.6, ISO 800



Pigeons – the ultimate starter project!  
 Canon EOS-1D X,  
 Canon 17-40mm  
 at 40mm, 1/250sec  
 @ f/16, ISO 100,  
 external flash



## Tip 1 Project

The best way of improving your photography and learning about a subject? Start a project. They're easy to do and can be a lot of fun; plus if you're trying to make a career out of photography, a well put together project can often be the perfect way of getting noticed.

From your local fox family to feral pigeons and everything in between, they all exhibit interesting behaviour and live in photogenic environments. It doesn't have to be one animal – perhaps tell the story of your local park or farm. Projects can also be used to tell important conservation stories.

If you're starting out, choose a common or easy-to-photograph species such as pigeons. Then you'll be able to keep going back to improve your technique. You'll hopefully be able to repeat instances and behaviour but you never know, you might record something never seen before!

## Tip 2 Light

Light is key. Backlighting and rim light are fantastic, especially in winter when the sun is low, not high and harsh as it is during summer. The warmer the light the better.

Remember that the shape of your animal is key – a hunched-over pigeon, for example, may not make the best backlight subject. Light can also be used to create silhouettes, especially when the sun has gone down.

Sunrise and sunset provide fantastic lighting conditions.  
 Canon EOS-1D Mark IV, Canon 500mm,  
 1/2500sec @ f/4,  
 ISO 160



## Tip 3 Framing

Framing can make the difference between a good photo and a great one. I've seen images (including mine) that would be improved if the taker was a foot to the left or right. Be patient – either move into a better position to frame your subject or wait for it to move into a better location that will allow for a more striking image.



## Tip 4 Timing

Timing is important in more ways than one. Early morning and evenings are not only best for light, but animals are often most active then. Otters, for example, are often seen at dawn.

Timing can relate to your approach, too. During breeding seasons in spring, don't get too close to nests or dens. The subject's welfare should always come first. Time of year can be key, too, such as in winter when large flocks of wintering wildfowl can be found.



Otters can be tricky to track down; dawn and dusk are your best bets.

*Canon EOS-1D Mark IV, Canon 500mm, 1/250sec @ f/4, ISO 1250*



## Tip 5 Backgrounds

Backgrounds for me can make or break an image. Sometimes you don't have a choice and the subject is in front of the messiest background possible or it just blends in too much (although that can tell a story). Before shooting, see if there's an alternative. Maybe you can lose the background by changing your exposure to throw it into darkness or throw it out of focus by changing your aperture and reducing your depth of field.



Check your background – if it's distracting it can ruin the image.

*Canon EOS-1D Mark IV, Canon 500mm, 1/250sec @ f/4, ISO 400*

## Tip 6 Go wide

Close-up portraits may be stunning, but zooming out and getting the whole scene including your subject can be just as effective. Or the complete opposite, maybe you can get close-up or use a camera trap. Using a wideangle on an animal close up can give some fantastic results. It could show them in a different perspective, give a sense of scale and show what kind of environment they live in.

## Tip 7 Experiment

Do not be afraid to experiment. Play around with your settings and see what you get – although some would argue there's a fine line between artistic blur and ready for your reject pile. If your subject is hanging around but moving, you can knock your shutter speed down and go for some pans; if the light is low, that will lend itself to some panning action, too. Whatever you do, please don't do the classic zoom in/out on bluebells.



Low light? Pan!  
*Canon EOS-1D X, Canon 500mm, 1/25sec @ f/4, ISO 200*



## Tip 8

# Be true to yourself and your subject

Wildlife is wild. That doesn't mean you can't take photos of captive animals, just don't forget to let people know that that is what they are. Your photos should be near identical to the scene you saw through the viewfinder, though of course there's no harm in making a few changes to brightness, contrast and the like, in Lightroom or Photoshop. Don't add elements to an image and not say so. Likewise don't remove elements that were there. There may be an annoying branch in the background but try to frame it out as you take the shot, not in post.

Baiting is all down to personal preference, but I'm morally against live baiting. Carrion, seeds, peanut butter etc are all useful and often make secretive animals a little easier to photograph. If baiting is used, do so sparingly; never let an animal become reliant on your food supply. Always remember what kind of photo you're taking. You want to represent behaviour that is typical of that animal.

Let nature be and keep your images as natural as possible.  
*Canon EOS-1D X,  
Canon 500mm  
with 1.4x converter,  
1/800sec @ f/5.6,  
ISO 500*



Turn your holiday  
into a photographic  
adventure.

*Canon EOS-1D X,  
Canon 500mm  
with 1.4x converter,  
1/320sec @ f/5.6,  
ISO 3200*



## Tip 9 Holiday

What better way of exploring your passion than by taking it on holiday with you? Countries all over the world – from Finland to Ecuador, Spain to Australia – are offering wildlife holidays. Be it specialist hides or safaris, photographing nature has become a lot more accessible.

Britain has some fantastic species, but you might get something a little different abroad. You don't have to go far; take a short-haul flight to southern Spain and you could be

photographing imperial eagles or even the rarest cat in the world, the Iberian lynx.

Africa is, of course, famous for its safaris. Try not to go with a tick list. Try to simply enjoy everything you see – don't go chasing after the big five. Instead spend time with species. Baboons are common but if you spend an hour or two with them then you'll see some amazing behaviour and possibly come home from your trip with a photo someone hasn't got before on safari.





Nature is everywhere, even in our cities.  
*Canon EOS-1D X, Canon 17-40mm at 40mm, 1/8sec @ f/4, ISO 125, external flash.*

## Tip 10 Urban jungle

Wildlife doesn't exist only in rural surrounds; many species are quite at home in our cities, too. Don't think because you're stuck in a city that there won't be any animals. Of course urban foxes are well known, but look out also for badgers, deer and even otters. Many bird species live in our towns and cities as well – our buildings can give good nesting sites away from predators.

## Tip 12 Storytelling

Images are the perfect tool for storytelling, as people often connect more with imagery than words. Some animals help you with expressions or body language. But the stories don't just have to be good ones – images are great for educating. A photo of an injured or dead animal can tell a story equally as well as a live one.



## Tip 11 Weather

Check the forecast. Some animals won't come out in bad weather, such as owls in heavy rain. Check rainfall timings – if it has been raining all day in summer and stops an hour or so before sunset, animals will be coming out to forage. Weather also offers photo opportunities. Fast shutter speeds in heavy rain give great frozen droplets, while misty mornings can provide incredibly atmospheric photo opportunities.



Even poor weather can provide exciting photographic opportunities.  
*Canon EOS-1D Mark IV, Canon 500mm, 1/320sec @ f/4, ISO 50*

## Tip 13 Research

Research your subject and location. You'll need to know about behaviour; where your subject likes to live, what it feeds on, when it may appear. Perhaps you suspect your local lake is home to kingfishers but you haven't seen one. Ask a dog walker or fisherman, they might visit regularly and will probably be in the know.

## Tip 14 Gear

It's crazy how much gear is out there now, but to take photos of wildlife you don't need tons of equipment. I'd recommend a comfy bag to hold your gear such as a Lowepro Whistler 350, a reliable large memory card such as a PNY 32GB 100MB/s so you don't have any buffer problems, a sturdy tripod and a pair of binoculars. Oh and a camera and lens combination might help. A good start would be a body with anything between 300-600mm lens.

## Tip 15 Have fun

Most of all, have fun – never let your project or subject get you down. There may be days when you don't get the shot you want or not even see anything at all, but don't let it stop you trying again. When you do finally get that shot, it is the best feeling. I recently spent 72 days looking for a lynx before I was able to get an image, and when I did it was like winning the lottery!



# WHAT DIGITAL Camera

**MONTHLY EXTRAS,  
EXCLUSIVE TO SUBSCRIBERS**

## Rewards



**50% OFF** food or **2 FOR 1** meals  
at thousands of UK restaurants  
with a **FREE 60 day**  
Gourmet Society  
membership



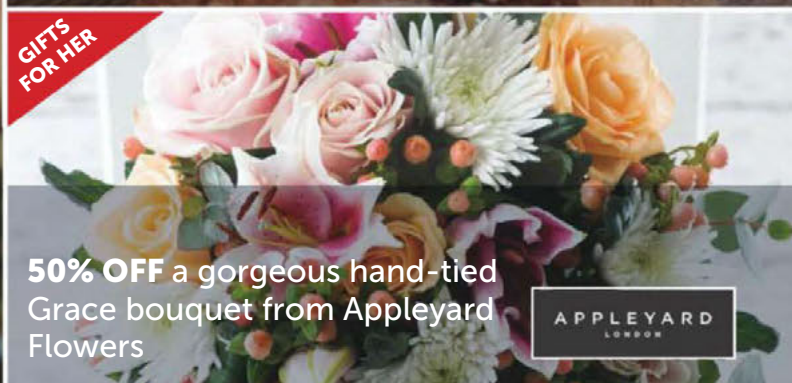
**FREE £5** voucher to spend  
online at PhotoBox

photobox



**50% OFF** a traditional steak  
selection box from Donald  
Russell with **FREE** delivery

DONALD RUSSELL  
*Real food, real flavour, every day*



**GIFTS  
FOR HER**

**50% OFF** a gorgeous hand-tied  
Grace bouquet from Appleyard  
Flowers

APPLEYARD  
LONDON

*Plus*

**WIN** the latest robot vacuum cleaner, the iRobot Roomba 980,  
worth **£899**

**iRobot**

**This month, be sure to log in to Rewards to access the above offers and you'll  
find even more online – all EXCLUSIVE and FREE to magazine subscribers.**

**Redeem your rewards today at**  
**[whatdigitalcamera.com/rewards](http://whatdigitalcamera.com/rewards)**

The Rewards scheme is available for all active print subscribers of magazines published by Time Inc. (UK) Ltd, free of charge. Closing dates apply to each partner offer. Please visit the Rewards website for more details. Full terms and conditions are available at [mymagazinerewards.co.uk](http://mymagazinerewards.co.uk). For enquiries, contact [rewards@quadrantsubs.com](mailto:rewards@quadrantsubs.com) or call 0330 333 0233 between 8.30am to 17.30pm (GMT) Monday to Friday.



# The **5 best** bridge cameras



The main appeal of bridge compacts is the convenience of having a huge focal range in one lens (much cheaper than building up a collection of individual lenses to cover the same range). Zoom power varies greatly between models, but most offer around 24mm at wideangle and anything from 200mm to 2000mm at maximum telephoto. While most superzooms look much like small DSLRs, their sensors are generally far smaller, so don't expect them to produce DSLR-like image quality. That said, their sensors are slowly getting larger, with an increasing number of manufacturers swapping out the small 1/2.3in sensors they have traditionally been fitted with for larger 1in sensors that produce better results in low light and high-contrast situations.

Turn over for our rundown of the **BEST 5 on the market...**

## Key points of a **bridge compact**

### Zoom control

A spring-loaded zoom switch is fine for short-zoom compacts, but can feel clumsy on a superzoom. A dedicated zoom ring on the lens barrel is much more intuitive and precise.

### Shooting modes

In addition to any auto modes, most superzooms are also equipped with the quartet of Program, Aperture-priority, Shutter-priority and Manual ("PASM") modes.

### Electronic viewfinder

EVFs have come a long way in recent years and allow you to hold the camera at eye level for greater stability. Not all superzooms are equipped with them, however.



### Lens

The focal range varies greatly between models, and while having 600mm or even 2000mm to hand can be useful, never judge a superzoom purely on the maximum telephoto reach of its lens.

## P68 Accessories



- Ikigai Rival Backpack
- COOPH Photo Glove Ultimate
- Joby Action Bike Mount and Light Pack • Takeway T1
- Clampod • TP-Link M7350 LTE-Advanced Mobile Wi-Fi

## P70 Camera test

The Canon G9 X, with its small size, undeniably good-looking design and fine image quality, is the ideal companion for a DSLR or CSC



## P72 Lens tests

Zeiss Milvus 50mm f/1.4 and Panasonic Lumix G 25mm f/1.7 ASPH – two lenses at opposing ends of the budgetary scale



## 5 Nikon P900 £499



Released in the spring of 2015 the P900's major selling point is its 83x optical zoom, which provides the 35mm focal range equivalent of 24-2000mm to make it the most powerful superzoom camera currently on the market. The camera comes equipped with Nikon's Dual Detect Optical VR image-stabilisation technology, which provides up to five stops of compensation to minimise image blur at extended telephoto settings. Maximum aperture is a fast f/2.8 at 24mm dropping incrementally to a much slower f/6.5 at maximum telephoto. As with the Canon G3 X, the P900 lacks a dedicated zoom ring on the lens barrel, however a

spring-loaded zoom control is built into the left-hand side of the lens, enabling you to operate the zoom with your left hand while holding the camera at eye level.

Behind its monster-sized zoom the P900 is fitted with a small 1/2.3in type sensor. This produces an effective resolution of 16MP, and is paired with Nikon's EXPEED C2 image processor to facilitate a native sensitivity range of ISO 100-1600, which can be extended to the equivalent of ISO 12,800 using the 'Hi1' setting. While the P900 is JPEG only, it does offer a good range of HD video recording options, including 1080p Full HD at 60fps.

The P900 comes equipped with a 3in/921k-dot vari-angle rear display, a 921k-dot electronic viewfinder, plus built-in Wi-fi and NFC connectivity. It's one of the larger superzoom models on the market, with its dimensions akin to those of a mid-range DSLR with a 18-105mm lens. Build quality is good overall, but the grip would benefit from being a bit larger to compensate for the additional weight.

### KEY SPECS

**SENSOR**  
1/2.3in 16MP CMOS  
**LENS**  
24-2000mm, f/2.8-6.5  
**REAR LCD**  
3in/921k-dots  
**EVF** 921k-dots  
**DIMENSIONS**  
139.5x137.4x103.2mm  
**WEIGHT** 899g with battery and card

### PROS

- Enormous zoom range
- Decent build quality
- Wi-fi and NFC

### CONS

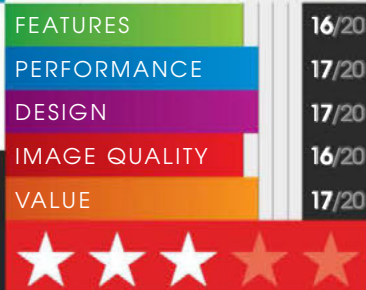
- JPEG only – no Raw shooting
- Small 1/2.3in type sensor

## Verdict

The P900 presents an interesting conundrum in that it comes equipped with a small 1/2.3in sensor, lacks Raw capture and yet packs the 35mm focal range equivalent of 24-2000mm in a single lens. If you mostly shoot in good light and can live without Raw then the P900 is well-built, easy to use and, of course, boasts enough zoom power to study the surface of the moon with.

### BEST FOR

- Extensive zoom range in one lens
- Those who prefer a simple-to-use camera and have no need for Raw shooting capabilities



## 4 Canon PowerShot G3 X £650



Released in summer 2015, the G3 X is built around a 1in back-illuminated CMOS sensor that provides 20.2MP of effective resolution. This is paired with Canon's latest DIGIC 6 image processor to produce a maximum continuous shooting speed of 5.9fps with focus locked to the initial frame, or 2.9fps with continuous autofocus in between shots. Sensitivity runs from ISO 125-12,800, with no extended settings. A built-in ND filter is provided, however. Elsewhere, the G3 X comes equipped with built-in Wi-fi connectivity, while videographers are well catered for with 1080p Full HD video recording at up to 60fps plus separate microphone and headphone inputs.

The G3 X is equipped with a 25x optical zoom that provides the

35mm focal range equivalent of 24-600mm. Maximum aperture at 24mm is a fast f/2.8, falling to around f/5 by 90mm, dropping to f/5.6 from 200mm and beyond. The zoom can only be operated via the spring-loaded zoom switch that encircles the shutter button. This does feel a little imprecise and clumsy compared to a zoom ring. On the plus side, the G3 X's built-in five-axis image-stabilisation technology is a welcome addition given the camera's extensive telephoto range. During testing we were able to shoot faraway objects at 600mm using shutter speeds as slow as 1/50sec and still get consistently sharp results.

The back of the G3 X has a tiltable 3.2in/1,620k-dot LCD display that also offers touchscreen control over the camera. And while there's no built-in EVF, the optional Canon EVF-DC1 electronic viewfinder can be purchased for an additional £200. With its dustproof and splashproof magnesium-alloy body, the G3 X feels solidly made, and at 733g it's not overly heavy either.

### KEY SPECS

**SENSOR** 1in 20.2MP CMOS  
**LENS**  
24-600mm, f/2.8-5.6  
**REAR LCD**  
3.2in/1,620k-dots  
**EVF** None  
**DIMENSIONS**  
123.3x105.3x76.5mm  
**WEIGHT** 733g with card and battery

### PROS

- 5-axis image stabilisation
- Touchscreen control
- Solid build

### CONS

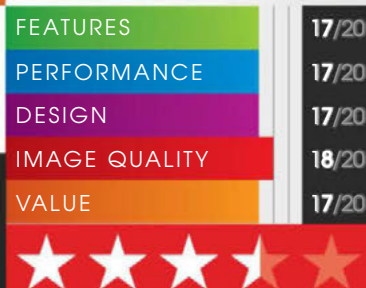
- Lack of viewfinder, with optional EVF-DC1 costing £200

## Verdict

While the lack of an EVF and a dedicated zoom ring on the lens barrel both compromise the G3 X's overall handling, it's otherwise a well specified bridge camera that can deliver very good results in the right hands. And while the G3 X's 25x optical zoom certainly isn't the fastest, having up to 600mm of telephoto reach to hand undoubtedly increases the camera's flexibility.

### BEST FOR

- Those who tend to shoot at low sensitivities and who are likely to use a camera in situations where the dustproof and splashproof body will be useful
- Those who aren't fussed by having a viewfinder





## 3 Fuji X-S1 £265



Released in the spring of 2012, the Fuji X-S1 is the oldest of all the models featured here. Despite this, it remains an excellent camera that has the added benefit of now being available for less than half its original £700 launch price. At its heart, the X-S1 is built around a 12MP 2/3in EXR CMOS sensor that has about twice the surface area of a standard 1/2.3in sensor. This is paired with Fuji's older EXR processor to facilitate a native sensitivity range of ISO 100-3200 along with a maximum continuous shooting speed of 7fps for full-size JPEGs. Lossless Raw capture is supported, as is 1080p Full HD video capture at up to 30fps.

Reflecting its age somewhat, there is no built-in Wi-fi connectivity.

The X-S1 is fitted with a 26x zoom that offers the 35mm focal range equivalent of 24-624mm. Better still, it's equipped with a dedicated zoom control ring on the lens barrel, which makes operating it intuitive and precise. Maximum aperture is f/2.8 at 24mm, dropping incrementally to f/5.6 by the time you reach 624mm. In addition to built-in image-stabilisation technology, the X-S1 also boasts a minimum focus distance of just 1cm.

While the X-S1 offers plenty of features, one area where it does fall a little short is the 3in/460k-dot display on the back, which isn't a particularly high resolution. Still, unlike more recent models such as the Canon G3 X, the four-year-old X-S1 does offer a half-decent 1.44m EVF, allowing you to hold and operate the camera at eye level. While the X-S1 is the largest camera here overall build quality remains very good, with the polycarbonate outer shell finished off with a metallic lens hood and mode dial.

### KEY SPECS

**SENSOR**  
2/3in 12MP EXR CMOS  
**LENS** 24-624mm, f/2.8-5.6  
**REAR LCD**  
3in/460k-dot vari-angle  
**EVF** 1.44m-dot  
**DIMENSIONS**  
149x107x35mm  
**WEIGHT** 945g with card and battery

### PROS

- 2/3in EXR CMOS sensor
- 7fps max speed • Manual zoom ring

### CONS

- No Wi-fi capability
- Less powerful zoom range than some

## Verdict

Despite being the best part of four years old, the Fuji X-S1 remains a well-specified superzoom that combines useful shooting features with good build quality and impressive handling. While the 26x optical zoom isn't the most powerful on the market the manually operated zoom ring is a huge bonus. At its current price, the X-S1 also represents excellent value for money.



### BEST FOR

- Those on a budget – thanks to its current price being less than half of what it was at launch
- Those who'd like a bridge compact with a good build quality for the price



## 2 Panasonic Lumix FZ1000 £589



Launched in summer 2014, the FZ1000 remains Panasonic's flagship superzoom. Built around a 1in Live MOS sensor with 20.1MP of effective resolution, the FZ1000 also employs Panasonic's proprietary Venus Engine image processor for a maximum burst speed of 12fps and a native sensitivity range of ISO 125-12,800 that can be expanded to the equivalent of ISO 80-25,600. Alongside the Sony RX10 II, the FZ1000 is the only camera in this round-up that can record 4K video, which it does at 25fps. In addition, it offers a generous range of 1080p Full HD and 720p HD options in both AVCHD and MP4 format.

The FZ1000 is equipped with a 16x optical zoom that provides the

35mm equivalent of 25-400mm. The zoom can be operated via a dedicated zoom ring on the lens barrel, or via a spring-loaded switch just in front of the shutter button. Maximum aperture is f/2.8 at 25mm, which falls to f/4 at 170mm and beyond. Panasonic's excellent 5-axis HYBRID O.I.S technology helps keep images sharp when shooting handheld at extended focal lengths. During testing, we were able to get consistently sharp images while shooting handheld at 400mm using shutter speeds as slow as 1/50sec.

A vari-angle 3in/921k-dot LCD display is fitted to the back of the FZ1000, which provides maximum flexibility as well as the ability to fold the display with the screen facing inwards for added protection. The rear display is complemented by a 0.39in, 2.35m-dot OLED EVF. The screen refresh rates are quick, with no screen judder visible when panning the camera in good light. In terms of build quality the FZ1000 feels solid, with the predominantly polycarbonate outer casing neatly complemented by a metal lens barrel.

### KEY SPECS

**SENSOR**  
1in 20.1MP High Sensitivity MOS  
**LENS**  
25-400mm, f/2.8-f/4  
**REAR LCD**  
3-in/921k-dots vari-angle  
**EVF** 2.36m-dots  
**DIMENSIONS**  
136.8x98.5x130.7mm  
**WEIGHT** 831g with card and battery

### PROS

- 4K video recording
- 5-axis IS technology
- Generously featured

### CONS

- Very few

## Verdict

If you're in the market for a generously featured superzoom with a larger than average sensor and 4K video recording abilities, but can't quite stretch your budget to the price of a Sony RX10 II then the Lumix FZ1000 is almost certainly the next best camera of its type. It's impressively quick, on top of which it also offers twice as much telephoto range as its nearest rival.



### BEST FOR

- Both beginners who want a solid all-rounder camera capable of producing excellent results, as well as more advanced photographers





# Sony RX10 II £1049

1

Unquestionably the best superzoom currently on the market

Released last summer as the successor to 2014's already excellent RX10 model, the RX10 II redefines what can be expected from a superzoom, bringing class-leading performance to the table alongside 4K video capture. Unashamedly premium in both price and design, the primary component that makes the RX10 II special and which elevates it beyond the competition is the 1in Exmor RS CMOS sensor. This is the same sensor that's also found inside the Sony RX100 III, which many consider to be the best advanced compact currently on the market.

Unlike the previous generation of backlit Sony Exmor R CMOS sensors, the Exmor RS uses a stacked design whereby the signal processing circuitry is positioned directly underneath the photodiodes rather than being routed around the sides to produce an overall processing speed that is 5x faster than that of the previous Exmor R sensor. On its own, this arrangement would produce too much data for the BIONZ X image processor to cope with. To get around this, the Exmor RS features an integrated DRAM chip located directly below the circuitry – hence the term 'stacked'. This memory chip essentially acts as a buffer, feeding information to the BIONZ X processor at a rate it can handle.

The practical benefits afforded by the faster Exmor RS sensor are numerous. For starters, maximum continuous shooting speed has

been raised to 16fps, which is currently the highest of any superzoom on the market and notably faster than the 10fps attainable by the RX10. Unlike its predecessor, the RX10 II also features an electronic shutter (in addition to a mechanical one) that facilitates a top shutter speed of 1/32,000sec, allowing you to use the RX10 II wide open in daylight conditions. Sensitivity remains unchanged, however, with the RX10 II offering a native range of ISO 100-12,800, which can be expanded to the equivalent of ISO 64. A built-in ND filter, meanwhile, provides an additional three stops should you want to use a slower shutter speed in bright conditions. The RX10 II is also equipped with built-in Wi-fi and NFC connectivity.

The premium-quality Zeiss Vario-Sonnar T lens provides the equivalent of 24-200mm in 24mm terms. While this is much more limited than most bridge cameras, the constant f/2.8 maximum aperture and physical zoom control ring around the lens barrel more than make up for it. The addition of an aperture ring is a nice touch, too, and gives a bit of retro charm. On the back, the RX10 II gets a tiltable 3in/1228k-dot LCD display and a 2.36m-dot OLED EVF that provides a near faultless user experience. Overall build quality is, again, the best in its class with the dust and moisture resistant magnesium alloy body feeling unquestionably solid and premium in the hand.

## KEY SPECS

**SENSOR** 1in 20.2MP Exmor RS CMOS  
**LENS** 24-200mm, f/2.8  
**REAR LCD** 3in LCD/1228k-dot tiltable  
**EVF** 2.36m-dot OLED  
**DIMENSIONS** 129x88.1x102.2mm  
**WEIGHT** 813g with card and battery

## Verdict

While the Sony RX10 II certainly isn't cheap, it's unquestionably the best superzoom currently on the market. Of course, with a focal range of just 24-200mm the RX10 II isn't by any means the most powerful superzoom on the market, however the constant f/2.8 maximum aperture more than makes up for this. In terms of speed, performance and overall build quality, the RX10 II remains ahead of the competition.

### BEST FOR

- Those after the best superzoom on the market
- A camera that delivers excellent image quality
- Capturing fast action at up to 16fps

## PROS

- Constant f/2.8 maximum aperture
- Top shutter speed of 1/32,000sec
- Built-in ND filter
- Built-in Wi-fi and NFC connectivity
- Physical zoom control

## CONS

- Less powerful zoom range than the competition





**You don't need an expensive  
camera to win awards.**

**1<sup>st</sup>  
PLACE**

**USED**



**Taken on:  
Canon EOS 550D**

+ 6 month guarantee on used items + 14 day no-quibble returns

**[www.camerajungle.co.uk](http://www.camerajungle.co.uk)**



**Joe,**  
"Fast and efficient. I thoroughly recommend them.  
They are a pleasure to deal with"



**Mark,**  
"Selling to them was easy: no fees to pay and just  
one buyer to deal with....simple, speedy and safe"



**Ron,**  
"Their service was first class and I am extremely  
pleased... I will definitely use them again"



# Ikigai Rival Backpack £229.99

UK.IKIGAI BAGS.COM

Newcomer Ikigai aims to take the humble camera bag and do something a bit different to the norm. Its idea is to produce a modular system that will allow padded camera cells to be interchanged between different types of outer bag. Its first products are two different sized backpacks, and we're looking at the smaller of them here.

In essence, what you get is a medium-sized backpack with a black nylon exterior, well-padded shoulder straps and a back that's designed to promote airflow and stop you getting sweaty. The contents are accessed by means of a zip that extends all around the back of the bag. Undoing it reveals a laptop compartment that will accommodate

models with screens up to 15in, such as a MacBook Pro, backed with another slimline sleeve for a tablet. The camera cell is an entirely separate bag that clips inside; it has a zipped top cover, along with zipped flaps allowing access from the sides. It will hold a professional DSLR with a 70-200mm f/2.8 lens attached, along with another four lenses and other accessories.

There's a lot to like about this bag – it seems sturdy and well made, and the quality of materials and finish is very good. Likewise, the camera cell is thickly padded and easily reconfigurable between top and side access, and the lime-green interior keeps contents visible.

The main problem is that it's impossible to get at your kit on the go – there's no access except through two sets of zips at the back. Also, the dual-bag design means you can fit less in compared to conventional backpacks of a similar size. So while the concept is interesting, it needs further work to be really practical.

## PROS

- Sturdy, high-quality finish

## CONS

- No access to kit while on the go



### Expandable top section

There's a small section at the top of the bag for personal items or accessories, which can be expanded by undoing a zip

### Mesh pockets

Additional elasticated mesh pockets on each side will hold a water bottle or umbrella.

### Detachable tripod holder

A full-sized tripod (50cm/20in folded) can be carried on the back, using a clip-on 'bucket' to hold the feet and a strap to secure it.

"The camera cell is easily reconfigurable between top and side access"



## COOPH PHOTO GLOVE ULTIMATE £199

STORE.COOPH.COM

Photo Glove Ultimate is a kind of mitt/glove hybrid. When zipped up, it functions as a leather mitt. Unzip them and push them back (magnets hold the thumb and fingers parts in place), and your fingers, encased in their lightweight inner 'gloves', are ready to operate a camera.

The internal gloves feature silicone aperture diaphragm motifs for grip, and each thumb and index finger has a nylon-like material that allows the user to handle a touchscreen. They are made with Primaloft insulation, so your hands will stay warm.

While the mitts have many excellent features, they are very expensive. Still, if you are trekking up mountains on a cold night and you'd like to do so in style, they might just be for you. **CMR**



## JOBY ACTION BIKE MOUNT AND LIGHT PACK £46

WWW.JOBY.COM

If you're an avid cyclist and own an action camera, you've probably mounted it on your bike to capture video footage. Basic bike mounts are fine, but if you'd like a broader range of mounting configurations, you'll want to look at a more sophisticated alternative, such as Joby's new Action Bike Mount.

Designed with multiple attachment points, the handlebar mount allows you to set up your action camera in a number of ways, with the option to attach other accessories via its 14-20 mounts. Front white and rear red visibility lights are also supplied. The mount itself is robustly made and certainly justifies spending the extra money if you're keen on the idea of mounting multiple devices securely to your bike. **MT**



## Takeway T1 Clampod £49.99

WWW.TAKEWAY.TW

Small camera supports that latch on to objects in your environment, such as desks and trees, aren't particularly new. Companies such as Joby have been doing this for a number of years. However, the Takeway T1 Clampod is slightly different. As the name suggests, it's a tripod and clamp all in one. Supplied in the box is a stabilising foot allowing the Clampod to act like a regular tabletop tripod, standing around 16cm tall. Using an easy-to-manoeuvre plastic handle, the vice mechanism can clamp down on to a variety of surfaces, opening up by 5cm. The clamp has cubic tips with flat, small ridges or deep ridges to help create better grip on different surfaces. On the top is a ball head that can be rotated 360°.



### PROS

- Well thought out
- Robust construction

### CONS



while a 90° cut groove allows for portrait-format shooting when the device is upright, and more positions when clamped to something that's not upright.

On the top is a standard camera tripod thread and the plate can be conveniently removed to let the user easily screw it into the camera. This means users can change cameras without having to take the Clampod out of position. Takeway rates its Clampod to 3kg – enough to hold a medium-sized DSLR with a lens. The Clampod's construction is of high quality, with a very solid build.

There are special attachments to make it possible to hold tablets and smartphones, so it's ideal for keeping on a desk, in a car or mounted on your bicycle. It is good to know it has a secondary use, because not many photographers are going to need to clamp their cameras to a tree on a daily basis.

Overall, this is quite a nice product and in comparison to others available it's far

more robust and secure without being too heavy. **CMR**

## TP-Link M7350 LTE-Advanced Mobile Wi-Fi £69

UK.TP-LINK.COM

MOBILE devices permeate almost every aspect of our lives. Smartphones and tablets are ubiquitous, and with increasingly powerful apps such as Snapseed and Lightroom for mobile, they have become useful tools for editing and sharing images quickly. Likewise, it's now possible to get small, lightweight laptops that are powerful enough for serious photo manipulation. However, many devices are entirely reliant on Wi-fi for their connectivity.

This is fine when you're within reach of a reliable network, but it can quickly become a problem when you're out and about. With the right contract for your smartphone, you might be able to tether other devices to it, but this can quickly get expensive if you use a lot of data.

The solution is a 'Mi-Fi' device such as the TP-Link M7350. This sets up a personal mobile Wi-fi network to which you can

connect up to 15 devices. Fit a data SIM from any mobile network provider, and you can then access the internet with a super-fast 4G connection. Using a Micro SD card up to 32GB in capacity, the M7350 can also work as a file storage and sharing device using the free tpMiFi app.

The M7350 is quick to set up, using a USB connection to a computer or a web interface over Wi-fi. You can easily change your security settings and it can save profiles for multiple SIMs, making it easy to use in different countries. Network speeds depend on location, but can be super-quick with a good 4G connection. Handy if you're uploading to, say Flickr, while travelling. **AW**



### PROS

- Mobile Wi-fi, as well as storage and sharing

### CONS

- Pricy, unless you really need every feature





The G9 X is available in either silver and brown, or all black



## CANON PowerShot G9 X £379

We put Canon's new slim compact with a 1in sensor through its paces  
WWW.CANON.CO.UK • TESTED BY ANDY WESTLAKE

Canon has a long history of making pocket cameras with good image quality and lots of manual controls, and the G9 X is its latest offering of this type. Its stylish, pocketable body measures just 98 x 57.9 x 30.8mm and weighs 209g. But into this Canon has squeezed a relatively large 20.2-million-pixel, 1in sensor that offers a sensitivity range of ISO 125-12,800, recording in both JPEG and Raw formats.

The 28-84mm equivalent lens has a maximum aperture of f/2-4.9. Compared to its peers this looks a little limited in terms of both range and aperture, which is the major price you pay for the G9 X's svelte dimensions.

Continuous shooting is available at up to 6fps when recording JPEG files, but drops to less than 1fps in Raw. A full complement of exposure modes is available, including an array of scene modes and full auto shooting for beginners. The G9 X can also record full HD video, and Wi-fi connectivity is built in for sharing images or controlling the camera remotely.

With its predominantly metal body shell and milled metal dials and controls, the G9 X feels robust and well made. But in your hand the feel is let down by the hard plastic used for the grip areas; I'd have preferred a softer rubberised finish.

When it comes to shooting, almost all settings are changed using the touchscreen in conjunction with a control dial

### KEY SPECS

**SENSOR** 20.2MP, 1in BSI-CMOS sensor  
**LENS** 28-84mm equiv. f/2-4.9  
**DISPLAY** 3in, 1.04-million-dot LCD touchscreen  
**OUTPUT SIZE** 5472 x 3648 pixels  
**FOCAL-LENGTH MAG** 2.7x  
**SHUTTER SPEEDS** 30-1/2,000sec  
**ISO** 125-12,800  
**METERING SYSTEM** Evaluative, centre, spot  
**EXPOSURE COMPENSATION** 3EV  
**DRIVE MODE** 6fps, or 4.3 fps with AF (JPEG)  
**VIEWFINDER** None  
**AF POINTS** Contrast detection with 31 points  
**VIDEO** 1080p at 60, 50, 30, 25 or 24fps, MP4  
**EXTERNAL MIC** No  
**MEMORY CARD** SD, SDHC, SDXC  
**POWER** NB-13L rechargeable Li-ion, 220 shots (CIPA standard)  
**DIMENSIONS** 98 x 57.9 x 30.8mm  
**WEIGHT** 209g (with battery and card)

around the lens. Tapping an onscreen button selects the setting you want to adjust, and rotating the dial changes it. Anyone brought up on touchscreen devices should feel right at home, but enthusiast photographers may find the lack of physical buttons frustrating. If so they'd be better served by Canon's higher-end G7 X, or one of Sony's RX100 models.

In good light autofocus is fast and accurate, and the focus point can be selected easily by tapping the touchscreen. But in low light focusing slows right down and becomes unreliable, especially at the long end of the zoom range.

In terms of image quality, the G9 X generally delivers good results. Its metering is very accurate, and auto white balance tends to give the right answer most of the time too. Indeed if you're looking mainly to use it as a 'point-and-shoot' camera, it's very good indeed.

The lens is pretty sharp at the telephoto end, and not at all bad in the middle of its range. But it's noticeably less good at wideangle, with somewhat soft corners if you look at your images close-up.

Canon's JPEG output is bright and colourful, and while this is great in dull conditions, occasionally it can look a little over the top. High ISO noise reduction can also smear fine detail. Canon does give some useful control over JPEG processing, but this is unavailable if you want to shoot Raw files alongside the camera's JPEGs.

## Verdict

With its small size, undeniably good-looking design, and fine image quality, the G9 X is an attractive little camera. For use primarily in auto mode, it's a tempting option. However, enthusiast photographers looking to take more control over shooting may not like its reliance on its touchscreen. Poor continuous shooting and unreliable low-light autofocus also make it difficult to recommend wholeheartedly to more demanding users.

### BEST FOR

• Those photographers looking for a small camera with high image quality to complement a DSLR or CSC

### PROS

- Slim, pocketable design
- Good image quality from 1in sensor
- Well-implemented touchscreen

### CONS

- Unambitious lens
- Limited physical controls
- Unreliable autofocus in low light

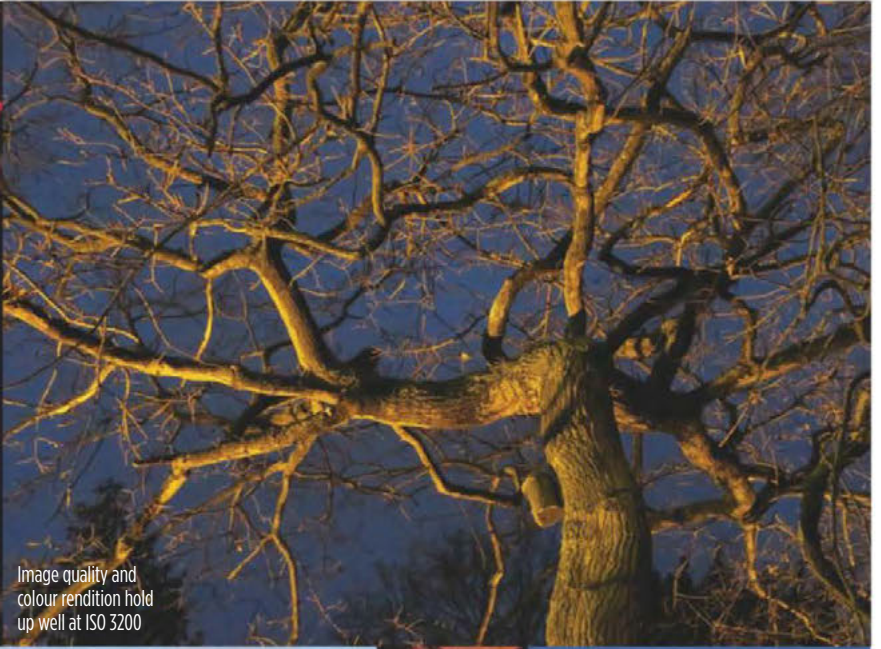




At ISO 6400, images are fine for small prints



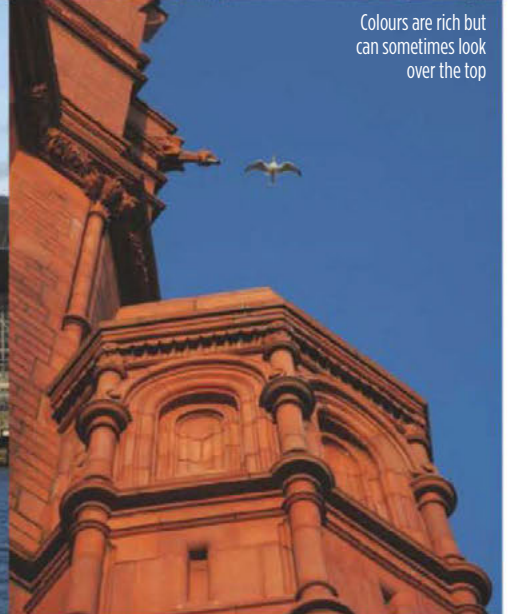
Image quality and colour rendition hold up well at ISO 3200



Both metering and white balance are usually well-judged



Colours are rich but can sometimes look over the top

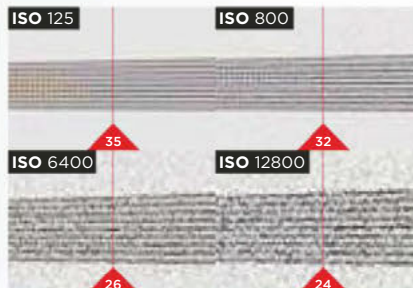


## Image quality



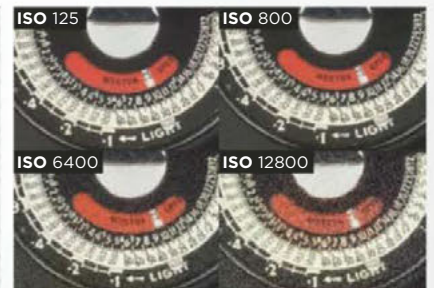
### COLOUR

In typical Canon fashion the G9 X delivers attractive, punchy colour, and maintains saturation impressively well at high ISOs, although at the expense of fine detail. However, some may find it overly cartoonish.



### RESOLUTION

In Raw the G9 X records over 3,500 l/ph at ISO 125, however the noise reduction smoothing limits it to 3,000 l/ph in JPEG. Resolution holds up well at ISO 800 (3,200 l/ph), but falls more rapidly at higher settings.



### IMAGE NOISE

The G9 X gives clean, highly detailed images at low ISOs. At ISO 800, noise begins to swamp fine detail, but the camera continues to give good results up to ISO 1600. The highest settings aren't great though.



# Zeiss Milvus

## 50mm f/1.4 £949



At f/11 we get crystal-clear detail and an extensive depth of field. You can count the hairs on the heads of the men and woman!

Why would you pay almost £1,000 for this weighty standard lens? We find out

WWW.ZEISS.CO.UK • TESTED BY DAMIEN DEMOLDER

Standard lenses for full-frame cameras are usually reasonably priced, of good quality and compact.

Recently, however, there has been a growing trend for faster standard primes that carry a premium in price, weight and size.

This new Zeiss Milvus 50mm is one such lens – but it demands that premium and more.

### Features

The Carl Zeiss Milvus 50mm f/1.4 is a manual-focus lens designed for Canon and Nikon camera owners with full-frame or APS-C sensors. A T\* accreditation lets us know that the brightness of exposure at any of the apertures will match exactly that of the same aperture on any other T\* lens. This point is perhaps more important to videographers than for stills workers. Zeiss has used ten elements in the construction, grouped into eight separate units, to create a retrofocal Distagon design, and has employed numerous special elements and surfaces to improve image quality. Six elements with

aspheric surfaces are used, along with four in a low-dispersion glass that Zeiss calls 'anomalous partial dispersion' glass. This reduces the likelihood of fringing appearing along high-contrast edges.

Zeiss claims its correction of coma and spherical aberrations will ensure high-resolution capture right across the surface of the sensor. The T\* surface coatings are designed to reduce flare and internal reflections so contrast can be

The manual focus ring is made of a rubber that sticks to the fingers, so no ribbing is required



maintained at a level that makes the most of the increasing dynamic range of modern imaging sensors – Nikon's in particular.

The company goes to great lengths to reduce the likelihood of light bouncing around inside the lens, including manually coating the outer edges of each element with black pitch – a delicate process that I've been lucky enough to witness.

### Build and handling

This lens is, as are all Milvus lenses, very pleasing to the eye. The soft-sheen paint and wide rubber focus ring look fantastic, and the outline of the barrel and metal hood curve exquisitely. The whole machine is made from metal, which lends both weight and stability to the construction. Even the lens hood, unlike so many of today's plastic versions, is solid and hard to the touch. There is soft, shallow-pile luxurious felt lining its interior.

The hood is massive, being 44mm high, 90mm across and a full 1mm thick, but its shape is perfect for turning back on itself when the lens



is not in use, and it fits beautifully, and protectively, over the front end of the barrel. The front end of the barrel fans outwards slightly as it covers the front element, which provides a comfortable gripping point when the lens is being held – even with gloved hands.

Being a lens intended for movies as well as stills, the manual-focus ring is designed to be easy to handle. It is 22mm wide, and made of a rubber that sticks to the fingers without the need for ribbing. The focus throw is extensive to allow for the tiny adjustments that are necessary with a wide-aperture lens – it needs a rotation of about 220° to go from the 45cm closest focus position to infinity. Focus markings, along with a depth of field scale, are engraved on the barrel.

I was using the ZF.2 Nikon-mount version of the lens, which is fitted with an aperture ring. The ring offers half-stop clicks between f/1.4 and f/11, and then a full stop to f/16, although body control of the iris allows 1/3EV steps to be used. The Nikon version also lets us de-click the ring so we can change aperture during filming without intruding on the audio recording.

As modern DSLRs don't allow very well for manual-focus systems, unfortunately, it is almost impossible to focus by eye because the modern focus screen does nothing to assist. So we have to use the AF points and the focus confirmation dot in the viewfinder – or tripod-mounted magnified live view. The lens worked nicely on my Nikon FM3A, though.

## Image quality

This 50mm Milvus is the sharpest lens we've tested for some time, and by some distance. Its wide-open performance eclipses most other 50mm lenses when they are set at their optimal apertures, but when it is used at f/5.6 it is astonishingly good. Corner resolution, although behind the centre between f/1.4 and f/5.6, again eclipses some other lenses when their centre resolution is measured, so while I can't tell you that resolution is even across the frame at all settings, it never drops to anything less than 'very good'. At all aperture settings, corner and centre resolution measurements are very similar, but they actually come together completely by f/4 and stay that way until f/16. Resolution peaks at f/5.6 and drops away to what we

would normally class as 'excellent' at f/16. It really is very sharp indeed.

As with all fast lenses, corners don't always receive the same amount of light as the middle of the frame. The effect is dramatic at f/1.4 but only remains so for a stop, as brightness is evened out by f/2.8. I found the brightness of the frame changes considerably as it lightens noticeably at f/2 and drops back down at f/2.8.

The uneven illumination fools the matrix metering of the camera. The effect is that the middle of the frame actually gets darker at f/2, while the outer areas brighten up – like inverted vignetting.

The absence of chromatic fringing is noticeable in images with high-contrast edges, so trees can maintain a natural colour appearance without the interference of purples, blues and greens. It's a joy to see such clean edges and not have to correct colour shifts and the grey-line hangovers they so often

produce. This is the pay-off we get from the size of the lens and the lengthened light path. Edges this clean really are quite unusual.

The lens isn't completely free of curvilinear distortions, but you really have to test it hard to find them. Similarly, the barrelling is very moderate indeed.

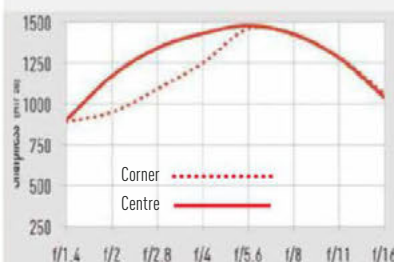
## Verdict

If you decide that you don't want to spend almost £1,000 on a standard lens, it won't be because this lens isn't good value for money – just that it is a lot of money. I began the test wondering how Zeiss could justify the asking price, despite its nice looks and quality build. I ended the test working out how much use I'd get from it if I bought one. It really is an exceptional piece of kit, and if sharpness, detail, clean edges and a delightful user experience are important to you, this lens was made with you in mind.

## Lab Tests

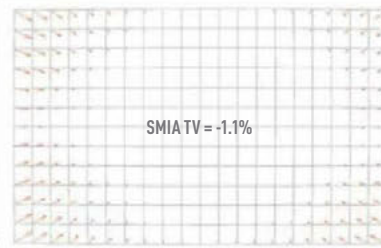
### RESOLUTION

There is no word for the resolution of this lens other than 'exceptional'. It performs as well wide open as most do closed to their optimal apertures. The chart reveals it's best at f/5.6.



### CURVILINEAR DISTORTION

For most of us there is no curvilinear distortion to worry about here. The amount of barrelling that exists is so small that only scientific users will need to take it into account.



### KEY SPECS

**FILTER DIAMETER** 67mm  
**LENS ELEMENTS** 10  
**GROUPS** 8  
**APERTURE** f/1.4  
**MINIMUM FOCUS** 45cm  
**LENGTH** 94mm  
**DIAMETER** 82.9mm  
**WEIGHT** 922g  
**LENS MOUNT** Canon EF, Nikon F

### PROS

- Impressive sharpness
- Barrel and metal hood curve exquisitely
- Feels great in the hand

### CONS

- Being manual focus only, this lens requires very careful focusing
- Expensive

**WDC RATING**



### Detail



Even when shot wide open at f/1.4, the Milvus shows exceptional resolution that's a match for modern high-resolution sensors. The main problem is focusing accurately enough



# Panasonic

## Lumix G 25mm

### f/1.7 ASPH £159



Shot wide open at f/1.7, the 25mm can give some nicely blurred backgrounds

We put an inexpensive fast normal prime for Micro Four Thirds cameras to the test

WWW.PANASONIC.CO.UK • TESTED BY ANDY WESTLAKE

At £159, Panasonic's latest lens, the Lumix G 25mm f/1.7 ASPH, has the potential to be the truly affordable 'normal' lens that the Micro Four Thirds system has lacked.

First, let's look at the current alternatives. Panasonic itself makes the compact Lumix G 20mm f/1.7 II ASPH and the faster Leica Summilux DG 25mm f/1.4, but they cost £270 and £380 respectively. Olympus has the M.Zuiko Digital 25mm f/1.8 that offers a near-identical core spec in a smaller size, but for around £290. Sigma makes 30mm f/2.8 and 19mm f/2.8 DN lenses that sell for a mere £130, but they gather 1.5 stops less light at maximum aperture. Finally, several ultra-fast manual focus 25mm f/0.95 options are available from Voigtlander, Mitakon and SLR Magic, but at two or three times the price. Clearly none of these give quite the same combination of fast maximum aperture and low price.

So for people who've just bought into Micro Four Thirds, Panasonic's new optic could well be the ideal second lens. Let's see how it fares.

## Features

With eight elements in seven groups, the Lumix 25mm has a more complex optical construction than most lenses with a similar angle of view. It also includes one ultra-high refractive index glass element and two aspherical elements, designed to minimise both chromatic and peripheral aberrations. The diaphragm comprises seven rounded blades, allowing the aperture to remain circular at larger f-numbers,

The manual focus ring dominates the barrel and drives the lens's focus group electronically



which usually gives a more attractive quality to the background blur. It's designed to be stepless and, like the focus motor, silent in use, making the lens suitable for video. However, there's no optical image stabilisation.

A broad manual focus ring covers much of the barrel, and drives the lens's focus group electronically. At the front is a thread for 46mm filters, which don't rotate on focusing. Behind it is a bayonet mount for the lens hood, which is included. The lens is shipped with a cosmetic ring covering the hood mount, which I removed and left in the box. Lens hoods don't just shield the lens from stray light but also protect the front element from accidental bumps, and I encourage their use routinely.

## Build and handling

The 25mm f/1.7 is fairly small, though it's not as compact as Olympus's equivalent or Panasonic's slimline 20mm f/1.7 'pancake' optic. It has a plastic barrel construction, but thankfully the mount is metal. The lens feels well made considering the price, though it probably won't



stand up to as much abuse as pricier options. Being so compact, it handles well, even on small bodies like Panasonic's GM and GF series, and it's equally good on SLR-style cameras such as the Panasonic G7. It comes in an understated matte-black or a silver version.

## Autofocus

As we've become used to from Panasonic, the lens focuses quickly, silently and decisively, thanks largely to its internal focus design. With the latest cameras, it will also continue to do so in remarkably low light without hunting back and forth for focus position. Notably, it's much faster at autofocus than Panasonic's 20mm f/1.7 pancake, which is a six-year-old design. The focus-by-wire manual focus system is likewise responsive and straightforward to operate.

Autofocus is accurate, regardless of whereabouts in the frame the focus area is positioned. However, during testing, I came across a slight catch; the lens's plane of sharp focus shifts forwards fractionally on stopping down, which is a symptom of residual spherical aberration. Because Micro Four Thirds cameras normally focus with the aperture set wide open, this can result in the edge being taken off the sharpness when you're shooting at f/2.8, particularly with close-up subjects. However, while this effect was easily measureable in our studio testing, many users are not likely to notice it during normal shooting.

## Image quality

I tested the Panasonic 25mm f/1.7 on several Micro Four Thirds bodies, including the Panasonic GM1 and Olympus OM-D E-M5 II. In general, I found it to be a pretty accomplished performer, giving attractive images that belie its bargain price.

At f/1.7, images are a little soft when examined at the pixel level, but stop down to f/2.8 and they gain noticeably more bite. Sharpest results are generally obtained around f/4 to f/5.6, and stopping down further sees diffraction progressively reducing pixel-level crispness; personally, I'd never use an aperture smaller than f/11. This isn't a defect, but an inevitable consequence of optical physics. With smaller sensor formats such as Micro Four Thirds, you simply shoot at larger apertures than with

full-frame or APS-C cameras. So if you'd normally use f/8 on full frame, the rule of thumb is to shoot at f/4 on Micro Four Thirds.

As usual with Panasonic, distortion is corrected in software, and in practical use you'll have to go out of your way to get anything other than perfectly square images. Likewise, vignetting is too low to be noticeable in most real-world use. Some green and magenta fringing can be visible in out-of-focus areas of the frame at larger apertures, but it's not overly distracting. If you use the lens on older Olympus bodies that can't correct lateral chromatic aberration, you'll also see minor green and magenta fringing towards the edges of the frame, but again it's not very objectionable.

Out-of-focus backgrounds are in general drawn relatively attractively, thanks in part to the lens's circular diaphragm. In fact, the lens's main flaw is when shooting directly into the light, where strong veiling flare

can cover much of the frame – but this isn't unusual with fast primes.

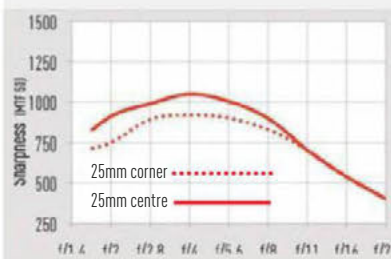
## Verdict

For all there is to like about mirrorless systems – particularly their compact size and light weight – one legitimate criticism has been the relatively high cost of many lenses. This is a shame, as adding a lens or two is the best way to make the most of an interchangeable lens camera, with fast normal primes at the top of the list. With the Lumix G 25mm f/1.7 ASPH, Panasonic has addressed this need with an impressive little lens. It's decently sharp, handles well, and focuses quickly and silently. Indeed, for the price, there's very little to complain about. Users with more to spend could also consider the Olympus M.Zuiko Digital 25mm f/1.8 or the Panasonic Lumix G 20mm f/1.7 ASPH. But for those building up a system on a budget, the 25mm f/1.7 is a great choice.

## Lab Tests

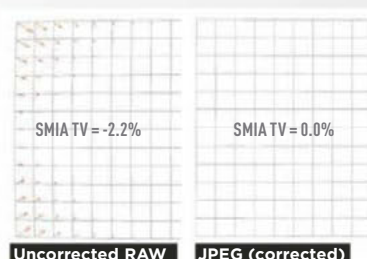
### RESOLUTION

Our tests show the lens is a little soft wide open, but improves quickly on stopping down. You'll get the best results from f/2.8-5.6, but apertures smaller than f/11 should usually be avoided.



### CURVILINEAR DISTORTION

With distortion correction applied automatically in software, most users will see perfectly corrected images all the time. Uncorrected Raw files show a little barrel distortion, however.



### KEY SPECS

**FILTER DIAMETER** 46mm  
**LENS ELEMENTS** 8  
**GROUPS** 7  
**APERTURE** f/1.7-2.2  
**MINIMUM FOCUS** 25cm  
**LENGTH** 52mm  
**DIAMETER** 60.8mm  
**WEIGHT** 125g  
**LENS MOUNT** Micro Four Thirds

### PROS

Decent image quality • Fast and silent AF • Very affordable price  
 • Lens hood included

### CONS

• No optical image stabilisation  
 • Can be susceptible to lens flare

**WDC RATING**



A minimum focus distance of 25cm allows close-up shooting with selective focusing

# Compact or System camera?

Which camera type is best for you? A simple compact that fits in a pocket, a premium or travel compact that's more advanced, or a system camera that has interchangeable lenses and more user control, such as a CSC or DSLR? We help you decide...

All digital cameras are based around the same theory; use a light-sensitive sensor to capture light, then process the result and save it onto a memory card. Beyond that, the functionality can vary wildly from model to model, from touchscreen controls to HD video and wide-aperture lenses differentiating one model from another.

Digital cameras fit into three distinct categories: compact camera, Compact System Camera (CSC) and Digital Single Lens Reflex (DSLR) cameras. All three have sub-genres within them, but there are other obvious qualities which set them apart.

Compact cameras have a fixed lens, which can't be removed and changed. This means that the lens becomes a feature in itself, with some of them starting at a particularly wide focal length, or reaching out much further than others (or both), and others having

wide maximum apertures which prove their worth in low light and for controlling depth of field.

Manual controls, the ability to record HD video and a large, high-resolution display or viewfinder are just a few of

many other features that can be had when more money is spent.

Within the compact camera genre are the likes of bridge, or 'superzoom' models, which offer a far longer zoom lens and a body shape akin to that

of a DSLR, together with manual control over shutter speed and aperture. While they can be used more creatively than regular compacts, their small sensors (relative to DSLR and CSC cameras) place restrictions on

## Compact

Small camera, generally pocket sized, with non-removable zoom lenses. Designed for convenience more than image quality, though some premium models feature larger sensors and manual controls.



### PROS

Small, Affordable, No additional lenses required, Pocketable, Less intimidating to use than DSLRs

### CONS

No option to change lenses for specific purposes, Small sensors not suited to all conditions

## Bridge camera

Looks like a DSLR but is actually a compact with a high-magnification zoom lens in a DSLR-shaped body – usually incorporating a large hand-grip and often a viewfinder.



### PROS

Long zooms, All-in-one design, Manual controls

### CONS

Generally small sensors are no match to DSLR quality, Build quality can be more plasticky than a DSLR

## Jargon Buster

### Compact System Camera (CSC)

Cameras which offer interchangeable lenses while omitting the viewfinder and mirror box construction common to DSLR cameras. These include Sony's NEX series and Olympus's PEN range, as well as Nikon's 1 system and Samsung's NX line of models.

### Digital Single Lens Reflex (DSLR)

A digital SLR camera, which is constructed around a mirror-box and pentamirror/pentaprism assembly, such as the Canon EOS 700D and Nikon D5300. These are popular among beginners, enthusiasts and

professionals, thanks to their wide compatibility with different lenses, manual control over exposure and ergonomics.

### Compact camera

A small camera whose lens cannot be removed, in contrast to interchangeable-lens cameras such as DSLRs. These are often cheaper than CSC and DSLR cameras, although they usually have more limited functionality and smaller sensors.

### Aperture

The aperture of a lens refers to the size of its opening which allows light through to the camera. This is created by a series of

blades inside the optic, and is usually regulated through the camera body, although some older lenses have physical aperture rings around their barrels. An aperture of f/2 or f/2.8 is classed as being large (or wide) because the opening itself is larger than those created by higher-number apertures such as f/16 or f/22.

### Shutter speed

The length of time that the shutter inside the camera is open, exposing the sensor to light. Longer shutter speeds let in more light, and so are often required in low-light conditions, or when the intention is to blur certain elements in the scene. Faster shutter

speeds are ideal for freezing motion, such as when photographing sports.

### Display

The rear panel on the back of a camera which shows captured images and videos, as well as the live feed from the sensor. These are usually TFT LCD types, although some cameras now make use of Organic Light Emitting Diode (OLED) alternatives. Resolution is usually specified in dots: compact camera displays often have 230k or 460k dots, while those displays that are on high-end enthusiast compacts, CSCs and DSLRs are usually 921k dots or even higher.



the kind of image quality that can be achieved.

## CSCs

CSCs fit somewhere between compacts and DSLRs, with the benefit of a small-format body and interchangeable lenses. Due to their mirrorless designs, optical viewfinders are exchanged for electronic variants that continue to get better all the time in terms of their resolution and sharpness.

Due to the lack of an established form factor, unlike DSLRs, CSCs come in a wide variety of shapes and sizes. Most differences are aesthetic, but a fair few affect the handling quite significantly too. Some models have thin, wide bodies, while others are shaped like DSLRs to provide more to wrap your hand around.

## DSLRs

DSLRs range from beginner models, such as the Canon EOS 1100D, up to professional level models, such as the same company's EOS-1D X. The body shape is similar throughout, with a large hand grip and dials on the top, although most professional DSLRs are more square than rectangular, with additional shutter release buttons and dials to make portrait-orientation shooting comfortable.

The addition of an optical viewfinder is one of the unique features that differentiates a

### Optical viewfinder

A viewfinder which relies on an optical, rather than electronic, construction. DSLRs are equipped with optical viewfinders, which present the view through the lens. Those on cheaper DSLRs are constructed with a hollow chamber with mirrored sides (penta-mirrors) while those on pricier models feature a ground glass prism (pentaprism) which is brighter.

### Electronic viewfinder (EVF)

An electronic alternative to an optical viewfinder. These are typically integrated into bridge cameras and some Compact System Cameras, where an optical

viewfinder is either not possible or less desirable. More recent EVFs are constructed from OLED panels rather than LCDs, and some of these are surprisingly detailed and bright.

### Sensor size

The physical size of the sensor inside a camera. Cameras with larger sensors often produce better-quality images than those with smaller ones, as each photosite is larger. A larger capacity allows its signal-to-noise ratio to be higher; as a result images stand a better chance of having a wider dynamic range and of being less affected by noise.

### ISO

Also known as 'sensitivity', the ISO range of a camera determines its latitude for capturing images in different conditions. For a given camera, images captured at lower sensitivities generally contain less noise than those captured higher up, as the signal from the sensor – which contains unwanted noise – requires less amplification.

### Burstrate

The speed at which a camera can fire consecutive frames, given in frames per second (fps). Many recent cameras have a standard fps rate which captures at the sensor's full resolution, with further faster

options which output images at a reduced pixel count. Often a camera's fastest burst mode will only be possible with focus and exposure taken from the first frame.

### Neutral Density (ND) filter

ND filters are commonly used with DSLR cameras, although some enthusiast compacts now have these integrated into their lenses. Their purpose is to reduce exposure times, so that longer shutter speeds can be used, with the 'neutral' part of their name signifying that they are designed to have no effect on the colour balance of an image.

## CSC

An interchangeable-lens camera with no optical viewing assembly but either an electronic one, or just the LCD screen to shoot with. CSCs come in a wide variety of forms with a wide range of sensor sizes, so image quality varies greatly between models.



### PROS

Typically smaller than DSLRs, HD video, Interchangeable lenses, Great image quality for the size

### CONS

Optical viewfinders usually not available, Lens ranges, Premium models can be expensive

## DSLR

The choice of professionals, a DSLR features interchangeable lenses, plus an optical viewfinder that sees what the lens sees thanks to a 45° mirror and prism assembly inside the camera. The bulkiest camera type, but the full frame models deliver the highest image quality.



### PROS

Interchangeable lenses, Manual exposure control, HD video, Excellent ergonomics

### CONS

Large and heavy bodies, Expensive, Poor-quality kit lenses often supplied as standard

DSLR model from most CSCs and compact cameras.

The only models that buck this trend, and as a result can't quite be described as true DSLRs, are those in the Sony SLT range, whose models include the A58 and A77. The SLT construction uses a translucent mirror which means it does not need to move in order for light to pass through to the sensor, in contrast to DSLRs which flip their mirrors up at the point of exposure. As a result the burst rate is faster; with the likes of the A77 able to shoot at up to 12fps. The disadvantage, depending on

your preference, is the presence of an electronic, rather than optical, viewfinder.

There are essentially two kinds of sensor used in DSLRs: APS-C and full frame, although full frame sensors are starting to creep into some CSCs such as the Sony Alpha 7 and 7R.

Full frame is described as such because it's roughly the same size as a 35mm negative. APS-C sensors are smaller, and as a result they only use the central part of a lens, which in turn increases their effective focal length (reducing the angle of view). This is known as a 'crop factor'. Full frame lenses

do not apply a crop factor to lenses, and so they maintain the same angle of view and focal length as if they were used on a film SLR.

DSLRs and CSCs also attract the attention of videographers, given the proliferation of HD video functionality and the range of lenses available. Many DSLRs – particularly those aimed towards a more discerning audience – also now incorporate ports for external microphones and have a full complement of options for different frame rates and output options as well as control over audio recording.

# Camera Listings

If you want maximum control over your creative shooting options, you want an interchangeable-lens camera, whether a DSLR model or a Compact System Camera model. Here we list and rate all the models on the market

## DSLRs

DSLRs									Stereo mk input		AF Points		Burst mode (FPS)		Viewfinder (%)		Built-in Wi-Fi		Built-in GPS		Flash		Articulated LCD		Touchscreen		Battery life (Shots)		Width (mm)		Height (mm)		Depth (mm)		Weight	
NAME & MODEL	RRP	TESTED	SCORE	SUMMARY	SENSOR	LENS	MAX ISO	VIDEO	SHOOTING				SCREEN				DIMENSIONS																			
Canon EOS 1200D	£450	06/14	4★	Entry level update to Canon's 1100D, the 1200D excels in the key areas of AF speed and accuracy while ISO performance is good	16MP	Canon	12,800	1080p	9	3	95			•	3in									500	129.6	99.7	78	480g								
Pentax K-500	£450	10/13	4★	Stripped-down version of K-50 without weather sealing boasts 100% glass prism viewfinder; uses AA batteries	16.3MP	Pentax	51,600	1080p	11	6	100			•	3in									410	130	97	71	646g								
Sony Alpha 58	£450	07/13	4★	Replacement for A57 boasts Bionz image processing engine, OLED viewfinder, plus 20MP sensor – up from 16MP	20.1MP	Sony	16,000	1080p	15	5	100			•	2.7in	•								690	129	95.5	78	492g								
Pentax K-S1	£550	03/15	4★	The fully-specified K-S1 boasts excellent image quality, while still being a lightweight, compact and portable option	12.1MP	Pentax	51,200	1080p	•	11	54	100		•	3in									tbc	92.5	120	69.5	498g								
Canon EOS 750D	£599	08/15	4★	A new addition to the EOS line-up, the 750D is designed for EOS newcomers, with a non-threatening layout	24.2MP	Canon	25,600	1080p	19	5	95	•		•	3in	•	•							440	131.9	100.7	77.8	555g								
Nikon D3300	£600	04/14	4.5★	Nikon's new entry-level DSLR is smaller than previous offerings while a sensor with no anti-aliasing filter means detail is high	24.2MP	Nikon	25,600	1080p	•	11	5	95		•	3in									700	124	98	75.5	460g								
Pentax K-30	£600	03/14	4★	Stellar image quality make this a welcome alternative to Canon, Nikon and Sony offerings at the price	16.3MP	Pentax	25,600	1080p	11	6	100			•	3in									410	96.5	128.5	71.5	660g								
Pentax K-50	£600	10/13	4.5★	Replacement for K-30 offers 16MP sensor, weather sealing and improved processing. Still able to shoot at up to 6fps	16.3MP	Pentax	51,200	1080p	11	4	100			•	3in									410	130	97	71	650g								
Canon EOS 760D	£649	10/15	5★	A new addition to the EOS line-up, the 760D leans towards the aspiring enthusiast photographer	24.2MP	Canon	25,600	1080p	19	5	100	•		•	3in	•	•							440	131.9	101	77.8	565g								
Pentax K-S2	£649	Web	4.5★	Pentax's latest mid-range DSLR continues its tradition of offering affordable yet well-specified cameras	20.2MP	Pentax	51,200	1080p	•	11	54	100	•	•	3in	•								410	122.5	91	72.5	678g								
Nikon D3200	£650	07/12	4.5★	With a 24MP sensor and excellent Guide mode, this is the perfect entry-level DSLR. Wi-Fi & GPS optional	24.2MP	Nikon	12,800	1080p	•	11	4	95		•	3in									540	125	96	76	505g								
Canon EOS 100D	£650	07/13	4.5★	Billed as the world's smallest and lightest DSLR; kit lens is the company's EF-S 18-55 f/3.5-5.6 IS STM zoom. GPS optional	18MP	Canon	12,800	1080p	•	9	4	95		•	3in									380	117	91	69	407g								
Nikon D5200	£720	03/13	4.5★	Inspired by the D5100 and D7000, the D5200 has a vari-angle LCD, 24MP sensor and HD video. Wi-Fi & GPS optional	24.1MP	Nikon	25,600	1080p	•	39	5	95		•	3in	•								n/a	129	98	78	555g								
Nikon D5500	£720	04/15	4.5★	New DX-format DSLR in Nikon's 'advanced beginner' range, updating the impressive D5300 and adding a touchscreen	24.2MP	Nikon	25,600	1080p	•	39	5	95	•	•	3.2in	•								820	124	97	70	470g								
Canon EOS 60D	£750	09/12	4.5★	Still current in the company's DSLR range, this semi-pro design packs in an 18MP CMOS sensor and a vari-angle screen	18MP	Canon	25,600	1080p	•	9	5	96			3in	•								1,100	145	106	79	755g								
Canon EOS 700D	£750	Web	4.5★	Update to 650D comes bundled with a new 18-55mm STM kit lens, that promises improved movie AF. GPS & Eye-Fi optional	18MP	Canon	12,800	1080p	•	9	5	95		•	3in	•								440	133	100	79	580g								
Pentax K-3 II	£769	Web	4.5★	Ricoh has updated the Pentax K-3 with the K-3 II. The K-3 II is designed to be the flagship Pentax APS-C DSLR	24.3MP	Pentax	51,200	1080p	•	27	8.3	100	•	•	3.2in									tbc	131.5	102.5	77.5	785g								
Sony Alpha 65	£790	02/12	4.5★	Featuring the same sensor as the A77, the A65 can rattle off 10 frames per second and has a crisp electronic viewfinder	24.3MP	Sony	16,000	1080p	•	15	10	100		•	3in									440	132	98	81	543g								
Nikon D5300	£830	01/14	4.5★	Update on the D5200 with large sensor, larger screen, HD video, and long lasting battery, should appeal to videographers	24.2MP	Nikon F	25,600	1080p	•	23	5	95	•	•	3.2in	•								700	125	98	76	530g								
Pentax K-5 II	£870	03/13	4.5★	Latest update to K-5 promises improved AF performance in low light and subject tracking with moving subjects	16.3MP	Pentax	51,200	1080p	•	11	7	100		•	3in									980	131	97	73	760g								
Nikon D7200	£939	06/13	4★	Nikon's latest mid-range DSLR offers impressive new features over the D7100 it replaces at the top of Nikon's DX format range	24.2MP	Nikon F	25,600	1080p	•	51	6	100	•	•	3.2in									1,100	135.5	106.5	76	765g								
Pentax K-3	£950	01/14	4★	Upgrade from Pentax K-5. GPS optional. Impersonates a low pass filter. High FPS rate and is the first to carry Ricoh's name	24.2MP	Pentax	51,200	1080i	•	27	8	100		•	3.2in									560	131	100	77	800g								
Sony Alpha 77 MkII	£1000	09/14	4.5★	With the mkII Sony has brought built-in Wi-Fi, great handling and an enhanced AF that will suit sports and wildlife shooters	24.3MP	Sony	25,600	1080p	•	79	12	100	•	•	3in	•								480	142.6	104	81	647g								
Nikon D7000	£1100	01/11	4.5★	A semi-pro DSLR offering some fantastic features and which still has everything an aspiring photographer would need	16MP	Nikon	25,600	1080p	•	39	6	100		•	3in									1,050	132	105	77	690g								
Canon EOS 70D	£1100	11/13	4.5★	World's first DSLR to boast Dual Pixel CMOS AF technology, giving the best autofocus performance for a DSLR during live view	20.2MP	Canon	12,800	1080p	•	19	7	98	•	•	3in	•								920	139	104	79	755g								
Nikon D7100	£1100	05/13	4.5★	The D7100 updates the D7000 in several significant ways, and while not without fault it's still praiseworthy. Wi-Fi optional	24.1MP	Nikon	25,600	1080p	•	51	6	100		•	3in									950	135	106	76	765g								
Canon EOS 7D MkII	£1599	01/15	4.5★	A better sensor and improved AF over the 7D; this is one of the best APS-C DSLRs for enthusiasts and pros. Wi-Fi optional	20.2MP	Canon	51,200	1080p	•	65	10	100		•	3in									670	148.6	112.4	78.2	910g								
Canon EOS 6D	£1700	02/13	4.5★	Superb image quality from Canon's latest – and cheapest – full-frame DSLR. Also offers Wi-Fi and GPS connectivity	20.2MP	Canon	102,400	1080p	•	11	4.5	97	•	•	3in									980	145	111	71	755g								
Nikon D610	£1800	12/13	5★	Upgrade from D600: improved auto white balance, faster continuous shooting and a quiet continuous mode. GPS optional	24.3MP	Nikon	25,600	1080p	•	39	6	100		•	3.2in	•								900	141	113	82	850g								
Sony Alpha 99	£1800	Xmas12	4★	Sony's full-frame A99 offers translucent mirror technology allied to a 19-point AF system with 11 cross sensors	24.3MP	Sony	25,600	1080p	•	19	10	100		•	3in	•								500	147	111	78	812g								
Nikon D750	£1800	12/14	5★	The D750 is one of the very best all-round enthusiast DSLRs currently available, with an impressive performance	24.3MP	Nikon	51,200	1080p	•	51	6.5	100	•	•	3.2in	•								1,230	140.5	113	78	840g								
Nikon D800	£2600	06/12	5★	Offering a massive 36MP, this is the camera to go for if you want to produce ultra-large prints. GPS optional	36.3MP	Nikon	25,600	1080p	•	51	4	100		•	3.2in									900	146	123	81	900g								
Nikon DF	£2600	02/14	4★	Nikon's retro-tinged full-frame DSLR has a solid spec although it lacks a video mode. Overall, its images are superb	16.2MP	Nikon	204,800	-	39	5.5	100			3.2in										1,400	143.5	110	66.5	765g								
Nikon D810	£2699	11/14	5★	Replacing the D800 and D800E, the D810 is a truly welcome upgrade and one of the very best DSLRs on the market	36.3MP	Nikon	51,200	1080p	•	51	12	100		•	3.2in									1,200	146	123	82	980g								
Nikon D800E	£2600	08/12	4.5★	Removes the anti-aliasing filter of the D800 for even greater detail should you need it. GPS optional	36.3MP	Nikon	25,600	1080p	•	51	4	100		•	3.2in									900	146	123	81	900g								
Canon EOS 5D Mk III	£2999	06/12	5★	An excellent full frame sensor, fast burst rate, high ISO range and advanced AF make this an impressive piece of kit. Wi-Fi optional	22.3MP	Canon	102,400	1080p	•	61	6	100		3.2in										950	152	116	76	950g								
Canon EOS 5DS	£2999	NYT		New full-frame DSLR that builds on the great success of its EOS 5D Mark III, which sports a world-first 50.6MP full frame sensor	50.6 MP	Canon	12,800	1080p	•	61	5	100		3.2in										700	152	116.4	76.4	845g								
Canon EOS 5DS R	£3199	09/15	5★	New 50MP full-frame DSLR, identical to the 5DS it was launched with except that it forgoes an optical low-pass filter	50.6 MP	Canon	12,800	1080p	•	61	5	100		3.2in										700	152	116.4	76.4	845g								
Nikon D4S	£5290	Web	5★	Nikon's flagship DSLR, the D4S takes the best features of the D4 and improved the burst speed, AF and processing power	16.2MP	Nikon	409,600	1080p	•	51	11	100		3.2in										3,020	160	156.5	90.5	1,300g								
Canon EOS-1D X	£5300	11/12	5★	A contender for the crown of best DSLR on the market, this camera is hard to fault. GPS & Wi-Fi optional	18.1MP	Canon	204,800	1080p	•	61	12	100		3.2in										1,120	158	163	82	1,100g								



## COMPACT SYSTEM CAMERAS

NAME & MODEL	RRP	TESTED	SCORE	SUMMARY	SENSOR	LENS	MAX ISO	VIDEO	SHOOTING										SCREEN				DIMENSIONS			
									Stereo mic input	AF Points	Burst (FPS)	Viewfinder	Built-in Wi-Fi	Built-in GPS	Flash	Articulated	Touchscreen	Battery life (shots)	Width (mm)	Height (mm)	Depth (mm)	Weight				
Sony Alpha 3000	£350	12/13	2.5★	Compact, affordable, and delivers DSLR-style results	20.1MP	Sony E	16,000	1080p		25	3.5	•			•	3in		480	128	91	84.5	353g				
Samsung NX3000	£350	10/14	4★	This may well be the best-value NX camera yet	20.3MP	Samsung	25,600	1080p		21	5		•		•	3in	•	370	117.4	66	39	266g				
Panasonic Lumix GF6	£400	Web	4★	Newly developed Venus Engine and a 180° tilt screen	16MP	Mic4/3	25,600	1080p	•	23	20		•		•	3in	•	340	111	65	38	323g				
Pentax Q7	£400	11/13	3★	Extra large sensor and improved AF	12.4MP	Pentax	12,800	1080p		25	5				•	3in		250	102	58	34	200g				
Samsung NX Mini	£400	Web	4★	The light and compact NX Mini is very impressive	21MP	Samsung	25,600	1080p		35	6		•		•	3in	•	530	119	62	22.5	196g				
Sony Alpha 5000	£420	Web	4★	Aims to compete with entry-level DSLRs	20.1MP	Sony	16,000	1080p	•	25	3.5		•		•	3in	•	420	110	63	36	296g				
Nikon 1 S1	£480	Web	4★	User-friendly with an uncluttered interface	10.1MP	Nikon 1	6400	1080p		135	60		•		•	3in		220	102	61	30	197g				
Olympus PEN E-PL5	£480	02/13	4★	One of the most competent CSCs at the price	16MP	Mic4/3	12,800	1080p	•	23	20		•		•	3in	•	360	110	64	34	261g				
Olympus PEN E-PL7	£499	01/15	4★	High spec, compact size and superb image quality	16MP	Mic4/3	25,600	1080p		81	8		•		•	3in		350	114.9	67	38.4	357g				
Nikon 1 J4	£499	11/14	4★	Excellent shooting speed and AF performance	18.4MP	Nikkor 1	12,800	1080p	•	171	20				•	3in	•	300	99.5	60	28.5	192g				
Fujifilm X-T10	£499	09/15	4.5★	A more affordable version of the popular X-T1	16.3MP	Fuji X	51,200	1080p	•	77	8		•	•	•	3in	•	350	118.4	82.8	40.8	381g				
Fujifilm X-A1	£500	12/13	4★	Virtually identical to X-M1, but with a standard sensor	16.3MP	Fuji X	25,600	1080p		41	5.6		•		•	3in	•	350	117	66.5	39	330g				
Samsung NX300	£530	06/13	4.5★	Company adds to its range of Wi-Fi-enabled cameras	20.3MP	Samsung	25,600	1080p		105	8.6		•	•	•	3.3in	•	320	122	64	41	284g				
Nikon 1 J3	£540	Web	3★	Boasts a 14.2MP sensor from range-topping V2	14.2MP	Nikon 1	6400	1080p		135	60				•	3in		220	101	61	29	244g				
Sony NEX-5T	£540	01/14	4★	APS-C sensor delivers DSLR results	16.1MP	Sony E	25,600	1080p		25	3		•		•	3in	•	330	111	59	39	276g				
Sony Alpha 5100	£549	12/14	4★	One of the very best in class, in video and image quality	24MP	Sony E	25,600	1080p		179	6		•		•	3in	•	400	110	63	36	283g				
Panasonic Lumix G6	£550	07/13	4.5★	DSLR-like performance and images	16MP	Mic4/3	25,600	1080p	•	23	7		•		•	3in	•	n/a	122	85	72	340g				
Canon EOS M3	£599	07/15	4★	The M3 looks set to appeal to enthusiast photographers	24.3MP	Canon M	25,600	1080p	•	49	4.2		•		•	3in	•	250	110.9	68	44.4	366g				
Panasonic Lumix GM1	£629	01/14	4.5★	Tiny, retro compact design is impressive	16MP	Mic4/3	25,600	1080p		23	5		•		•	3in	•	230	99	55	30	204g				
Sony Alpha 6000	£670	06/14	4.5★	Class-leading AF and an impressive APS-C sensor	24MP	Sony	25,600	1080p		179	11		•		•	3in	•	310	120	67	45	344g				
Panasonic Lumix G7	£679	08/15	4★	The G7 is Panasonic's fifth model to have video capture	16MP	Mic4/3	25,600	3840p		8		•	•		•	3in	•	360	124.9	86.2	77.4					
Fujifilm X-M1	£680	10/13	4★	Company's third CSC features X-mount lens mount	16.3MP	Fuji X	6400	1080p		54	5.6		•		•	3in	•	350	117	67	39	330g				
Olympus OM-D E-M10	£699	05/14	4.5★	Maintains the high-end features of its OM-D siblings	16MP	Mic4/3	25,600	1080p	•	81	8		•		•	3in	•	320	119	82	46	396g				
Canon EOS M	£700	XMAS12	4.5★	Shares much of its functionality with the EOS 650D DSLR	18MP	Canon M	25,600	1080p		31	4.3		•		•	3in	•	230	109	66.5	32	298g				
Panasonic Lumix GM5	£749	01/15	4★	Small CSC with an electronic viewfinder	16MP	Mic4/3	25,600	1080p	•	23	5.8		•		•	3in	•	210	98.5	59.5	36	211g				
Nikon 1 AW1	£749	12/13	3.5★	High-end CSC is waterproof and shockproof	14.2MP	Nikon 1	6400	1080p		41	15		•	•	•	3in		220	113	71.5	37.5	356g				
Nikon 1 V2	£800	02/13	3.5★	Revamp for V1. Price includes 10-30mm kit lens	14.2MP	Nikon 1	6400	1080p	•	73	15				•	3in		n/a	109	82	46	277g				
Sony NEX-6	£800	01/13	4★	Excellent EVF and fast operation	16.1MP	Sony E	25,600	1080p	•	25	10		•		•	3in	•	360	120	67	43	287g				
Olympus OM-D E-M5 mkl	£900	05/15	5★	Olympus's latest premium CSC boasts several improvements	16MP	Mic4/3	25,600	1080p	•	81	10		•			3in	•	750	123.7	85	44.5	469g				
Panasonic Lumix GX7	£900	10/13	4.5★	With fast AF and tiltable EVF, delivers excellent results	16MP	Lumix G	25,600	1080p		23	40		•		•	3in	•	n/a	122.6	70.7	43.3	402g				
Olympus PEN E-P5	£900	09/13	4.5★	No built-in EVF but has fast AF plus high quality images	16MP	Mic4/3	25,600	1080p		35	9		•	•	•	3in	•	330	122	69	37	420g				
Samsung NX30	£900	Web only	4.5★	A DSLR-style CSC with a burst rate of up to 8fps	21MP	Samsung	25,600	1080p	•	247	8		•	•	•	3in	•	360	127	96	58	375g				
Panasonic Lumix GX8	£1000	10/15	4★	The highest resolution Micro Four Thirds camera yet	20.3MP	Mic4/3	25,600	3840p	•	49	8		•		•	3in	•	330	133.2	78	63.1	487g				
Fujifilm X-T1	£1100	4/12	5★	One of the best premium CSCs on the market	16.3MP	Fuji X	51,200	1080p	•	49	8		•		•	3in	•	350	129	89.8	46.7	440g				
Panasonic Lumix GH3	£1120	XMAS12	5★	Responsive touchscreen and superb video mode	16MP	Mic4/3	25,600	1080p	•	23	6		•		•	3in	•	540	133	93.4	82	470g				
Fujifilm X-E1	£1149	01/13	4.5★	Solid build, retro design and high image quality	16MP	Fuji X	25,600	1080p		49	6				•	3in		350	129	75	38	350g				
Olympus OM-D E-M5	£1150	5/12	4.5★	The re-imagining of the classic Olympus OM	16MP	Mic4/3	25,600	1080p	•	35	9		•		•	3in	•	tbc	121	89.6	41.9	373g				
Fujifilm X-E2	£1200	02/14	4.5★	Has over 60 improvements on the X-E1	16.3MP	Fuji X	25,600	1080p	•	49	7		•		•	3in		350	129	75	37	350g				
Samsung NX1	£1299	02/15	5★	The first camera with an APS-C BSI sensor is impressive	28.2MP	Samsung	25,600	4096p	•	205	15		•		•	3in	•	tbc	138.5	102.3	65.8	550g				
Panasonic Lumix GH4	£1300	07/14	4★	Both 4K video quality and still images are impressive	16MP	Mic4/3	25,600	4096p	•	49	12		•		•	3in	•	500	133	93	84	560g				
Samsung Galaxy NX	£1300	10/13	4★	World's first 3G/4G Android CSC	20.3MP	Samsung	25,600	1080p	•	105	8.6		•	•	•	4.8in	•	-	137	101	26	495g				
Olympus OM-D E-M1	£1300	12/13	5★	Fully weather-proofed and Wi-Fi enabled	16.8MP	Mic 4/3	25600	1080p	•	81	10		•		•	3in	•	330	130	93.5	63	497g				
Sony Alpha 7	£1300	01/14	4.5★	One of the lightest, smallest full-frame cameras	24.3MP	Sony E	25,600	1080p	•	117	5		•			3in	•	340	127	94	48	474g				
Leica T	£1350	08/14	4★	Excellent image quality	16MP	Leica T	12,500	1080p		195	5		•		•	3.7in	•		134	69	33	384g				
Fujifilm X-Pro1	£1430	05/12	5★	Offers innovations including a hybrid viewfinder	16MP	Fuji X	25,600	1080p		49	6					3in		300	139	81.8	42.5	450g				
Sony Alpha 7 II	£1498	03/15	5★	The full-frame A7 II is at the top of Sony's CSC range	24.3MP	Sony E	25,600	1080p	•	117	5		•		•	3in		350	126.9	95.7	59.7	556g				
Sony Alpha 7R	£1700	02/14	4.5★	One of the lightest, smallest full-frame cameras	36.4MP	Sony E	25,600	1080p	•	25	4		•			3in	•	340	127	94	48	465g				
Sony Alpha 7S	£2099	09/14	4.5★	The Sony Alpha 7S is the latest Sony full-frame CSC	12.4MP	Sony E	409,600	1080p	•	25	5		•			3in	•	380	127	94.4	48.2	489g				
Sony Alpha 7R II	£2599	11/15	5★	A big step up from the A7R; one of the best CSCs available	42.4MP	Sony E	102,400	3840p	•	399	5		•		•	3in	•	290	126.9	95.7	60.3	625g				

# Lens Listings

A DSLR or Compact System Camera is hugely affected by the lens attached to the front, as the light hitting the sensor impacts focus, exposure and image quality. Cast your eyes over our lens listings to find out which is best for you before you make a purchase

## BUILT-IN FOCUS MOTOR

Some lenses incorporate a motor within the lens to drive the autofocus, while others are powered by motors within the camera. The former will focus quicker than the latter. Canon lens motors are USM (Ultrasonic Motor), Sigma HSM (Hypersonic-Motor).

### 35mm Compatibility

Most digital sensors are smaller than 35mm, which is why lenses designed for digital can be smaller.

## LENS MOUNTS

Each manufacturer has its own lens mount and most aren't compatible with one another. For example, a Canon DSLR can't use Nikon lenses, though you can use independent brands if you get them with the right mount.

## FILTER THREAD

In order to correct for colour casts or create more contrast, a screw-in filter can be used. The thread at the front of the camera will have a diameter, in mm, which will allow you to attach a variety of filters or adapters to the lens.

## MAGNIFICATION FACTOR

If you're changing from a 35mm SLR, your lenses won't provide the same field of view on a DSLR unless you have a "full-frame" model. So for Nikon, Pentax and Sony DSLRs, magnify the focal length by 1.5x to get a 35mm equivalent; for Canon 1.6x and Sigma 1.7x.



### Maximum Aperture

Wider apertures mean you can use faster, motion-stopping shutter speeds.

## Lens types explained



### Fixed focal length (PRIME)

Fixed lenses offer wider maximum apertures and superior image quality. A 50mm lens is perfect for low light, 85-105mm is ideal for portraits, while a 300mm+ tele is for sports shooters.



### Telephoto zoom

Telephotos are great for sport and wildlife, while short teles are good for portraits. Telephoto lenses magnify camera shake, so look for one with Image Stabilisation to ensure you achieve the sharpest shots possible.



### Standard zoom

Most DSLRs come with a standard zoom which spans from moderate wideangle to short telephoto. These 'kit' lenses are fine for most purposes, but there are alternatives that offer superior image quality.



### Superzooms

While they rarely compare with shorter lenses in image quality, a superzoom offers convenience. Great for travelling when you're conscious of weight, don't expect pin-sharp, aberration-free images.



### Wideangle zoom

Wideangle lenses make subjects seem further away, enabling you to get more into the shot – perfect for landscapes and architecture. The most popular wideangle zooms are the 10-20mm and 12-24mm ranges.



### Macro lenses

A true macro lens lets you reproduce your subject at life-size (1:1) or half life-size (1:2) on the sensor. Macro lenses come in various focal lengths and extension tubes can offer a greater magnification.

## LENS SUFFIX GUIDE USED BY MANUFACTURERS

<b>AD</b> Tamron Anomalous Dispersion elements	<b>DG</b> Sigma's designation for all lenses	<b>FE</b> Tokina floating element lenses	<b>N</b> Nikon's Nano Crystal Coating	<b>SWD</b> Olympus Supersonic Wave Drive
<b>AF-DC</b> Nikon defocus feature	<b>DI</b> Tamron lenses for full-frame sensors	<b>G</b> Nikon lenses without an aperture ring	<b>OS</b> Sigma's Optically Stabilised lenses	<b>SWM</b> Nikon lenses with a Silent Wave Motor
<b>AF-S</b> Nikon lenses with Silent Wave Motor	<b>Di-II</b> Tamron lenses designed for APS-C	<b>HF</b> Sigma Helical Focusing	<b>PRO</b> Tokina's Professional range of lenses	<b>TS-E</b> Canon Tilt and Shift lens
<b>APD</b> Sigma Apochromatic lenses	<b>DO</b> Canon diffractive optical element lenses	<b>HID</b> Tamron's High Index Dispersion glass	<b>RF</b> Sigma & Nikon Rear Focusing	<b>UD</b> Canon Ultra Low Dispersion glass
<b>ASL</b> Tamron lenses featuring aspherical elements	<b>DT</b> Sony lenses for APS-C sized sensors	<b>HLD</b> Tokina low dispersion glass	<b>SD</b> Tokina's Super Low Dispersion element	<b>USM</b> Canon lenses with an Ultrasonic Motor
<b>ASP</b> Sigma lenses featuring aspherical elements	<b>DX</b> Nikon's designation for digital lenses	<b>HSM</b> Sigma's Hypersonic Motor	<b>SDM</b> Pentax's Sonic Direct Drive Motor	<b>VC</b> Tamron's Vibration Compensation
<b>AT-X</b> Tokina's Advanced Technology Extra Pro	<b>ED</b> Low Dispersion elements	<b>IF</b> Internal Focusing	<b>SF</b> Canon lenses with Softfocus feature	<b>VR</b> Nikon's Vibration Reduction feature
<b>CRC</b> Nikon's Close Range Correction system	<b>EF</b> Canon's full-frame lenses	<b>IRF</b> Tokina's Internal Rear Focusing lenses	<b>SHM</b> Tamron's Super Hybrid Mount	<b>XR</b> Tamron Extra Refractive Index glass
<b>D</b> Nikon lenses that communicate distance info	<b>EF-S</b> Canon lenses for APS-C sized sensors	<b>IS</b> Canon's Image Stabilised lenses	<b>SIC</b> Nikon's Super Integrated Coating	<b>ZL</b> Tamron's Zoom Lock feature
<b>DA</b> Pentax lenses optimised for APS-C sized sensors	<b>EX</b> Sigma's 'Excellent' range	<b>L</b> Canon's 'Luxury' range of lenses	<b>SLD</b> Sigma Super Low Dispersion elements	
<b>DC</b> Sigma's designation for digital lenses	<b>FC</b> Tokina's Focus Clutch Mechanism	<b>LD</b> Tamron Low Dispersion glass	<b>SP</b> Tamron's Super Performance range	
<b>DF</b> Sigma lenses with dual focus facility	<b>FE</b> Canon's fisheye lenses	<b>M-OIS</b> Mega Optical Image Stabilisation	<b>SSM</b> Sony/Minolta Supersonic Motor lenses	



CANON					Image Stabilisation	Mount	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Mount	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
EF 8-15mm f/4 L USM	£1499	NTT		Impressive-looking fisheye zoom lens from Canon	•	•	15	n/a	78.5	83	540g
EF-S 10-18mm f/4.5-5.6 IS STM	£299	11/14	4★	A superb ultra wideangle that's a must-have for anyone shooting landscapes and cityscapes	•	•	22	67	74.6	72	240g
EF-S 10-22mm f/3.5-4.5 USM	£990	9/09	4★	A good performer, with solid MTF curves and minimal chromatic aberration	•	•	24	77	83.5	89.8	385g
EF 11-24mm f/4L USM	£2799	NTT		Long-awaited by Canon full-frame users, this is the world's widest-angle rectilinear zoom lens	•	•	28	n/a	108	132	1180g
EF 14mm f/2.8 L II USM	£2810	7/10	4.5★	Impressive resolution at f/8 but less so wide open	•	•	20	n/a	80	94	645g
EF-S 15-85mm f/3.5-5.6 IS USM	£900	3/11	4★	4-stop image stabilisation and Super Spectra coatings, together with a useful range	•	•	35	72	81.6	87.5	575g
EF 16-35mm f/2.8 L II USM	£1790	6/10	4.5★	Mark II of above lens, and a good performer with strong results at f/8 in particular	•	•	28	82	88.5	111.6	635g
EF 16-35mm f/4L IS USM	£1199	9/14	4★	Versatile and with a useful IS system, this is a very good ultra-wideangle zoom for full frame cameras	•	•	28	77	82.6	112.8	615g
TS-E 17mm f/4 L	£2920	NTT		Tilt and shift optic with independent tilt and shift rotation and redesigned coatings	•	•	25	77	88.9	106.9	820g
EF 17-40mm f/4 L USM	£940	11/08	4★	Designed to match the needs of demanding professionals – and does so with ease	•	•	28	77	83.5	96.8	500g
EF-S 17-55mm f/2.8 IS USM	£795	2/13	4★	Very capable lens with three-stop image stabilisation, Super Spectra coating and a circular aperture	•	•	35	77	83.5	110.6	645g
EF-S 17-85mm f/4-5.6 IS USM	£600	11/08	3★	Doesn't really live up to its promises. The zoom range is excellent but there are better alternatives	•	•	35	67	78.5	92	475g
EF-S 18-55mm f/3.5-5.6 IS II	£220	11/08	3.5★	Given the low price of this zoom, its results are very impressive	•	•	25	58	68.5	70	200g
EF-S 18-135mm f/3.5-5.6 IS	£500	NTT		4-stop image stabilisation and automatic panning and tripod detection	•	•	45	67	75.4	101	455g
EF-S 18-200mm f/3.5-5.6 IS	£740	10/11	4★	Automatic panning detection (for image stabilisation) and a useful 11x zoom range	•	•	45	72	78.6	102	595g
EF 20mm f/2.8 USM	£610	NTT		Wideangle lens with a floating rear focusing system and a USM motor	•	•	25	72	77.5	70.6	405g
EF 24mm f/1.4 L II USM	£2010	NTT		Subwavelength structure coating, together with UD and aspherical elements	•	•	25	77	93.5	86.9	650g
EF 24mm f/2.8 IS USM	£750	05/13	4★	Small wideangle optic with image stabilisation	•	•	25	58	67.5	48.5	270g
TS-E 24mm f/3.5 L II	£2550	NTT		Tilt and shift optic with independent tilt and shift rotation and redesigned coatings	•	•	21	82	88.5	106.9	780g
EF 24-70mm f/2.8 L USM	£1540	7/09	4.5★	A solid performer with an excellent reputation that only years in the field can secure	•	•	38	77	83.2	123.5	950g
EF 24-70mm f/2.8 L II USM	£2300	XMAS 12	5★	Professional quality standard zoom lens with a fast aperture	•	•	38	82	88.5	113	805g
EF 24-70mm f/4 L IS USM	£1499	NTT		L-series zoom said to be compact, portable and aimed at both professionals and amateurs	•	•	38	77	83.4	93	600g
EF 24-105mm f/4 L IS USM	£1049	3/13	4.5★	An excellent all-round performer, and keenly priced too	•	•	45	77	83.5	107	670g
EF 24-105mm f/3.5-5.6 IS STM	£479	NTT		A versatile standard zoom lens that's an ideal route into full frame photography	•	•	40	77	83.4	104	525g
EF 28mm f/1.8 USM	£570	NTT		USM motor and an aspherical element, together with a wide maximum aperture	•	•	25	58	73.6	55.6	310g
EF 28mm f/2.8 IS USM	£730	05/13	3.5★	Lightweight and inexpensive lens, with a single aspherical element	•	•	30	52	67.4	42.5	185g
EF 28-135mm f/3.5-5.6 IS USM	£560	12/09	4.5★	Excellent optical performance, with the benefit of image stabilisation	•	•	50	72	78.4	96.8	540g
EF 28-300mm f/3.5-5.6 L IS USM	£3290	NTT		L-series optic with expansive range, image stabilisation and a circular aperture	•	•	70	77	92	184	1670g
EF 35mm f/2	£320	3/12	4.5★	A cut-price fixed focal length lens	•	•	25	52	67.4	42.5	210g
EF 35mm f/2 IS USM	£799	NTT		First 35mm prime from Canon to feature an optical stabilisation system	•	•	24	67	62.6	77.9	335g
EF 35mm f/1.4 L USM	£1720	NTT		L-series construction and a wide maximum aperture, with a ring-type USM	•	•	30	72	79	86	580g
EF 40mm f/2.8 STM	£230	NTT		A portable and versatile compact pancake lens. A fast maximum aperture enables low-light shooting	•	•	30	52	68.2	22.8	130g
EF 50mm f/1.2 L USM	£1910	NTT		Very wide maximum aperture and Super Spectra coatings, and a circular aperture	•	•	45	72	85.8	65.5	580g
EF 50mm f/1.4 USM	£450	2/10	5★	Brilliant performer, with a highly consistent set of MTF curves. AF motor is a tad noisy though	•	•	45	58	73.8	50.5	290g
EF 50mm f/1.8 STM	£130	09/15	5★	Lightest EF lens in the range, with wide maximum aperture and a Micro Motor	•	•	35	49	69.2	39.3	130g
EF 50mm f/2.5 Macro	£350	NTT		Compact macro lens with floating system	•	•	23	52	67.6	63	280g
EF-S 55-250mm f/4-5.6 IS II	£330	1/12	4★	Ideal budget addition to the 18-55mm kit lens, with image stabilisation and USM	•	•	110	58	70	108	390g
EF-S 60mm f/2.8 Macro USM	£540	8/06	4★	Great build and optical quality, with fast, accurate and near-silent focusing	•	•	20	52	73	69.8	335g
MP-E65 f/2.8 1-5x Macro	£1250	NTT		Macro lens designed to achieve a magnification greater than 1x without accessories	•	•	24	58	81	98	710g
EF 70-200mm f/2.8 L USM	£1540	NTT		Non-stabilised L-series optic, with rear focusing and four UD elements	•	•	150	77	84.6	193.6	1310g
EF 70-200mm f/4 L IS USM	£1450	11/11	5★	A superb option for the serious sports and action photographer	•	•	120	67	76	172	760g
EF 70-200mm f/2.8 L IS II USM	£2800	10/10	5★	A great lens but also a costly one. Peak resolution at 0.4 cycles-per-pixel is simply amazing	•	•	120	77	88.8	199	1490g
EF 70-200mm f/4 L USM	£790	NTT		A cheaper L-series alternative to the f/2.8 versions available	•	•	120	67	76	172	705g
EF 70-300mm f/4.5-5.6 IS USM	£470	11/10	4★	A great level of sharpness and only the small apertures should be avoided	•	•	150	58	76	143	630g
EF 70-300mm f/4-5.6 L IS USM	£1600	7/11	5★	An L-series lens with a highly durable outer shell	•	•	120	67	89	143	1050g
EF 70-300mm f/4.5-5.6 DO IS USM	£1700	NTT		3-layer diffractive optical element and image stabilisation	•	•	140	58	82.4	99.9	720g
EF 75-300mm f/4-5.6 III	£300	NTT		Essentially the same lens as the 75-300mm f/4.0-5.6 III USM but with no USM	•	•	150	58	71	122	480g
EF 75-300mm f/4-5.6 III USM	£350	9/07	2.5★	Good but not outstanding. The inclusion of a metal lens mount is positive, though	•	•	150	58	71	122	480g
EF 85mm f/1.2 L II USM	£2640	8/06	4★	A well-crafted lens, with fast and quiet AF with good vignetting and distortion control	•	•	95	72	91.5	84.0	1025g
EF 85mm f/1.8 USM	£470	2/11	5★	Non-rotating front ring thanks to rear focusing system, as well as USM	•	•	85	58	75	71.5	425g
TS-E 90mm f/2.8	£1670	NTT		Said to be the world's first 35mm-format telephoto lens with tilt and shift movements	•	•	50	58	73.6	88	565g
EF 100mm f/2 USM	£559	NTT		A medium telephoto lens with a wide aperture, making it ideal for portraits	•	•	90	58	75	73.5	460g
EF 100mm f/2.8 Macro USM	£650	11/09	4★	A solid performer, but weak at f/2.8 (which is potentially good for portraits)	•	•	31	58	79	119	600g
EF 100mm f/2.8 L Macro IS USM	£1060	1/13	5★	Stunning MTF figures from this pro-grade macro optic	•	•	30	67	77.7	123	625g
EF 100-400mm f/4.5-5.6 L IS USM	£1940	NTT		L-series construction and optics, including fluorite and Super UD elements	•	•	180	77	92	189	1380g
EF 135mm f/2 L USM	£1360	NTT		L-series construction with two UD elements and wide maximum aperture	•	•	90	72	82.5	112	750g
EF 135mm f/2.8 SF	£520	NTT		Soft-focus feature with two degrees of softness	•	•	130	52	69.2	98.4	390g
EF 180mm f/3.5 L Macro USM	£1870	NTT		L-series macro lens with inner focusing system and USM technology	•	•	48	72	82.5	186.6	1090g
EF 200mm f/2 L IS USM	£7350	NTT		5-stop Image Stabilisation with tripod detection and Super Spectra lens coatings	•	•	190	52	128	208	2520g
EF 200mm f/2.8 L II USM	£960	NTT		Two UD elements and a rear-focusing system in this L-series optic	•	•	150	72	83.2	136.2	765g
EF 300mm f/2.8 L IS II USM	£7500	NTT		4-stop Image Stabilisation makes this lens perfect for action photography	•	•	200	52	128	248	2400g
EF 300mm f/4 L IS USM	£1740	NTT		Two-stop image stabilisation with separate mode for panning moving subjects	•	•	150	77	90	221	1190g
EF 400mm f/2.8 L IS USM	£9810	NTT		Super telephoto with ring-type USM, one fluorite element and image stabilisation	•	•	300	52	163	349	5370g
EF 400mm f/4 DO IS USM	£8000	NTT		Multi-layer diffractive optical element to correct for chromatic aberration	•	•	350	52	128	232.7	1940g
EF 400mm f/5.6 L USM	£1660	NTT		Super UD and UD elements, as well as a detachable tripod mount and built-in hood	•	•	350	77	90	256.5	1250g
EF 500mm f/4 L IS USM II	£5299	NTT		Full-time manual focus, a single fluorite element and dust and moisture protection	•	•	450	52	146	387	3870g

NIKON

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	MOUNT						Min Focus (cm)	Filter Thread (mm)	DIMENSIONS		
						Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma			Width (mm)	Length (mm)	Weight
10-55mm f/2.8 G ED DX Fisheye	£678	NT		DX format fisheye lens with Nikon's Close-Range Correction system and ED glass					•			14	n/a	63	62.5	300g
10-24mm f/3.5-4.5 G ED AF-S	£834	10/09	4★	MTF performance is good from wide open to f/11, only breaking down past f/22					•			24	77	82.5	87	460g
12-24mm f/4 G ED AF-S DX	£1044	9/09	4★	This venerable optic may be a little weak at f/4, but otherwise it's a good performer					•			30	77	82.5	90	485g
14mm f/2.8 D ED AF	£1554	7/10	5★	A really nice lens that handles well and offers excellent image quality					•		•	20	n/a	87	86.5	670g
14-24mm f/2.8 G ED AF-S	£1670	2/08	5★	A remarkable piece of kit, producing sharp images with little chromatic aberration					•		•	28	n/a	98	131.5	970g
16mm f/2.8 D AF Fisheye	£762	NT		Full-frame fisheye lens with Close-Range Correction system and 25cm focus distance					•		•	25	n/a	63	57	290g
16-35mm f/4 G ED AF-S VR	£1072	6/10	5★	A fantastic lens that deserves to be taken seriously, with very little CA throughout	•				•			28	77	82.5	125	685g
16-80mm f/2.8-4E ED VR AF-S DX	£869	11/15	4★	This new standard zoom for DX-format users is designed as a travel lens for APS-C DSLRs	•				•			35	72	80	85.5	480g
16-85mm f/3.5-5.6 G ED VR AF-S DX	£574	3/11	4★	Boasting Nikon's second-generation VR II technology and Super Integrated Coating	•				•			38	67	72	85	485g
17-35mm f/2.8 D ED-IF AF-S	£1878	NT		High-quality wideangle zoom for full-frame Nikon users					•		•	28	77	82.5	106	745g
17-55mm f/2.8 G ED-IF AF-S DX	£1356	3/07	4★	A higher quality standard zoom for DX-format DSLRs					•			36	77	85.5	110.5	755g
18-35mm f/3.5-4.5 G ED AF-S	£669	Xmas13	5★	Wideangle zoom with instant manual-focus override for full-frame DSLRs					•		•	28	77	83	95	385g
18-55mm f/3.5-5.6 G II AF-S DX	£156	12/08	3.5★	Entry-level standard zoom lens					•			28	52	73	79.5	265g
18-55mm f/3.5-5.6 G VR AF-S DX	£188	5/08	4★	An improvement over the above version, with excellent resolution and the benefit of VR					•			28	52	70.5	74	205g
18-55mm f/3.5-5.6 G VR II AF-S DX	£229	NT		Popular 3x zoom lens that is remarkably compact and lightweight, offering great portability	•				•			28	52	66	59.5	195g
18-105mm f/3.5-5.6 G ED VR AF-S DX	£292	8/12	4.5★	Kit lens for Nikon D90 & D7000 with Silent Wave Motor and Vibration Reduction					•			na	67	76	89	420g
18-140mm f/3.5-5.6 G ED VR AF-S DX	£579	NT		A compact and lightweight DX-format zoom, this lens is a great all-rounder	•				•			45	67	78	97	490g
18-200mm f/3.5-5.6 G IF-ED AF-S	£762	10/11	4.5★	4-stop VR II system, two ED and three aspherical elements in this DX superzoom lens	•				•			50	72	77	96.5	560g
18-300mm f/3.5-5.6 G ED-IF VR	£850	12/12	4★	DX-format zoom lens with wideangle to super-telephoto reach	•				•			45	77	83	120	830g
18-300mm f/3.5-6.3 G ED VR	£849	NT		New DX-format 16.7x zoom with super-telephoto reach – a compact 'walkabout' lens	•				•			48	67	78.5	99	550g
20mm f/1.8 G ED AF-S	£679	NT		A fast FX-format prime lens that's compact and lightweight					•			20	77	82.5	80.5	335g
20mm f/2.8 D AF	£584	NT		Compact wideangle lens with Nikon's Close-Range Correction system					•		•	25	62	69	42.5	270g
24mm f/2.8 D AF	£427	NT		Compact wide lens with Close-Range Correction system					•			30	52	64.5	46	270g
24mm f/1.4 G ED AF-S	£1990	8/10	5★	Nothing short of stunning. Aside from its high price there is very little to dislike about this optic					•		•	25	77	83	88.5	620g
24mm f/1.8 G ED AF-S	£629	NT		Fast FX-format lens that aims to appeal to landscape, interior, architecture and street photographers					•			23	72	77.5	83	355g
24mm PC-E f/3.5 D ED PC-E	£1774	NT		Perspective Control lens with Nano Crystal Coating and electronic control over aperture					•		•	21	77	82.5	108	730g
24-70mm f/2.8 G ED AF-S	£1565	7/09	5★	An excellent set of MTF curves that show outstanding consistency, easily justifying the price of this lens					•		•	38	77	83	133	900g
24-85mm f/3.5-4.5 G ED VR	£520	XMAS 12	5★	FX-format standard zoom with Auto Tripod detection and VR					•			38	72	78	82	465g
24-120mm f/4 G ED AF-S VR	£1072	5/11	5★	Constant maximum aperture of f/4 and the addition of VR makes this a superb lens	•				•		•	45	77	84	103	710g
28mm f/1.8 G ED AF-S	£619	4/13	5★	If you crave a wide aperture and prefer a single focal length then this Nikon prime delivers					•		•	25	67	73	80	330g
28mm f/2.8 D AF	£282	NT		Compact wideangle lens with a minimum focusing distance of 25cm					•		•	25	52	65	44.5	205g
28-300mm f/3.5-5.6 G ED AF-S VR	£889	1/13	4.5★	Technical testing shows this zoom to be, as Nikon claims, the 'ideal walkabout lens'	•				•		•	50	77	83	114	800g
35mm f/1.8 G AF-S DX	£208	3/12	5★	Designed for DX-format DSLRs, a great standard prime lens					•			30	52	70	52.5	200g
35mm f/1.8 G ED AF-S	£180	NT		Fast FX-format prime lens with bright f/1.8 aperture. Versatile and lightweight					•			25	58	72	71.5	305g
35mm f/2 DAF	£324	9/08	3★	At wide-aperture settings this optic achieves respectable resolution, which decreases with aperture					•		•	25	52	64.5	43.5	205g
35mm f/1.4 G ED AF-S	£1735	9/12	5★	A Nano Crystal-coated lens designed for the FX range					•		•	30	67	83	89.5	600g
40mm f/2.8 G AF-S DX Micro	£250	12/11	5★	A budget-priced macro lens that delivers the goods on multiple fronts					•			20	52	68.5	64.5	235g
45mm PC-E f/2.8 D ED	£1774	NT		Perspective Control lens with ED glass and Nano Crystal Coating					•		•	25	77	83.5	112	780g
50mm f/1.2	£855	NT		Ultra-fast f/1.2 aperture prime lens					•			50	52	68.5	47.5	360g
50mm f/1.4 D AF	£292	2/10	5★	Entry-level prime puts in a fine performance while offering backwards compatibility with AI cameras					•		•	45	52	64.5	42.5	230g
50mm f/1.4 G AF-S	£376	2/10	5★	Internal focusing and superior AF drive makes this a good alternative to the D-series 50mm f/1.4	•				•		•	45	58	73.5	54	280g
50mm f/1.8 D AF	£135	NT		Compact, lightweight, affordable prime, will stop down to f/22					•		•	45	52	63	39	160g
50mm f/1.8 G AF-S	£200	9/11	5★	A cut-price standard lens for FX shooters or a short telephoto on DX-format DSLRs					•		•	45	58	72	52.5	185g
55mm f/2.8 Micro	£625	NT		Macro lens with 1/2 maximum reproduction ratio					•			25	52	63.5	62	290g
55-200mm f/4-5.6 G VR AF-S DX	£314	8/07	3.5★	Designed for DX-format cameras, with Vibration Reduction and SWM technology					•			110	52	73	99.5	335g
55-300mm f/4.5-5.6 G VR AF-S DX	£378	1/12	3★	Offers a wide telephoto coverage, but better options available					•			140	58	76.5	123	530g
58mm f/1.4 G AF-S	£1599	2/14	4★	FX-format full frame premium prime lens with large f/1.4 aperture					•		•	58	72	85	70	385g
60mm f/2.8 D AF Micro	£405	8/06	5★	Nikon's most compact Micro lens, with Close Range Correction (CRC) system					•		•	22	62	70	74.5	440g
60mm f/2.8 G ED AF-S Micro	£500	NT		Micro lens with 1:1 repro ratio, as well as a Silent Wave Motor and Super ED glass					•		•	18	62	73	89	425g
70-200mm f/2.8 G ED VR II AF-S	£2085	10/10	5★	Very little to fault here, with stunning image quality and consistent results at different focal lengths	•				•		•	140	77	87	209	1540g
70-200mm f/4 G ED VR	£1180	7/13	5★	Latest 70-200mm offers third-generation VR and weight savings over its more expensive f/2.8 cousin	•				•		•	1000	67	78	178.5	850g
70-300mm f/4.5-5.6 G ED AF-S VR	£556	11/10	4★	Feature-packed optic, with a VR II system, 9-bladed diaphragm, SWM and ED glass	•				•		•	n/a	67	80	143.5	745g
80-600mm f/4.5-5.6 G ED VR AF-S	£1899	10/15	5★	Successor to the 80-400mm f/4.5-5.6 ED VR, focusing is excellent at tracking fast-moving subjects	•				•			175	77	95.5	207	1570g
85mm f/3.5 G ED AF-S DX VR	£522	NT		DX-format Micro lens with a 1:1 reproduction ratio, VR II system and ED glass	•				•			28	52	73	98.5	355g
85mm f/1.4 G AF-S	£1532	2/11	5★	Fast mid-tele lens with an internal focusing system and rounded diaphragm					•		•	85	77	86.5	84	595g
85mm f/1.8 D	£385	NT		Portable medium telephoto – ideal for portraits					•			85	62	71.5	58.5	380g
85mm f/1.8 G AF-S	£470	5/12	5★	Rear-focusing system and distance window in this medium telephoto lens					•		•	80	67	80	73	350g
105mm f/2.8 G AF-S VR II Micro	£782	11/09	4.5★	A very sharp lens, with swift and quiet focusing and consistent MFT results	•				•		•	31	62	83	116	720g
105mm f/2 D AF DC	£980	NT		A portrait lens with defocus control					•			90	n/a	79	111	640g
135mm f/2 D AF DC	£1232	NT		Defocus-Image Control and a rounded diaphragm in this telephoto optic					•			110	n/a	79	120	815g
180mm f/2.8 D ED-IF AF	£782	NT		Useful telephoto length and internal focusing technology, together with ED glass					•			150	72	78.5	144	760g
200mm f/4 D ED-IF AF Micro	£1429	NT		1:1 reproduction range in this Micro lens, with a Close-Range Correction system					•		•	50	62	76	104.5	1190g
200mm f/2 G ED AF-S VR II	£5412	NT		A full-frame lens offering ghost-reducing Nano Crystal coating	•				•		•	190	52	124	203	2930g
200-500mm f/5.6 E ED VR AF-S	£1179	NT		A super-telephoto zoom lens compatible with Nikon FX-format DSLR cameras	•				•			220	95	108	267.5	2300g
300mm f/4 E PF ED VR AF-S	£1230	08/15	5★	Light, compact AF-S full-frame telephoto lens with ED glass elements	•				•		•	140	77	89	147.5	755g
300mm f/2.8 G ED AF-S VR II	£5209	NT		This lens promises fast and quiet AF, and is fitted with Nikon's latest VR II system	•				•		•	230	52	124	267.5	2900g



## OLYMPUS

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation						Min Focus (cm)	Filter Thread (mm)	DIMENSIONS		
					Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma					
					MOUNT										
7-14mm f/4 ED	£1900	6/08	5★	An excellently constructed objective, with image quality to match			•				25	n/a	86.5	119.5	780g
8mm f/3.5 ED Fisheye	£930	NYT		Diagonal fisheye lens, offering a 180° view and a splash-resistant construction			•				13	n/a	79	77	485g
9-18mm f/4-5.6	£640	9/09	4★	Good results up to f/11, past which point resolution drops a little			•				25	72	79.5	73	280g
12-50mm f/3.5-6.3 ED	£370	5/13	4★	Offers electromagnetic zoom mechanism plus variable zoom speed			•				20	72	57	83	211g
12-60mm f/2.8-4 ED SWD	£1130	11/08	4.5★	While not quite as consistent as the 14-54mm, this optic is perhaps more versatile			•				25	72	79.5	98.5	575g
11-22mm f/2.8-3.5	£1020	NYT		Wide angle (2x) addition to Olympus E-System lens range			•				28	72	75	92.5	485g
14-35mm f/2 ED SWD	£2400	NYT		Pro lens with Supersonic Wave Drive AF system and dust and splashproof casing			•				35	77	86	123	915g
14-42mm f/3.5-5.6 ED	£285	NYT		Small, light lens especially designed for the compact Four Thirds system standard			•				25	58	65	61	190g
14-54mm f/2.8-3.5 II	£660	12/09	4★	An affordable lens with great resolution – only CA control lets it down a touch			•				22	67	74.5	88.5	440g
18-180mm f/3.5-6.3	£560	6/10	4★	A good performer everywhere except at 180mm, with a solid feel to it			•				45	62	78	84.5	435g
25mm f/2.8 Pancake	£270	9/08	3.5★	Excellent image quality from such a tiny optic, but the lens cap is a little fiddly			•				20	43	64	23.5	95g
35mm f/3.5 Macro	£270	NYT		Macro lens equivalent to 70mm on a full-frame camera			•				14	52	71	53	163g
35-100mm f/2	£2630	NYT		One Super ED and four ED elements inside this telephoto optic			•				140	77	96.5	213.5	1650g
40-150mm f/4-5.6 ED	£300	NYT		ED and aspherical elements in this optic, together with an internal focusing system			•				90	58	65.5	72	220g
50mm f/2 ED Macro	£600	8/06	3.5★	A fast, high-quality lens, with excellent MTF curves and low chromatic aberration			•				24	52	71	61.5	300g
50-200mm f/2.8-3.5 ED SWD	£1300	NYT		Supersonic Wave Drive focusing system and an equivalent focal range of 100-400mm			•				120	67	86.5	157	995g
70-300mm f/4-5.6 ED	£450	NYT		Three ED elements and multi-coatings feature in this popular tele-zoom optic			•				96	58	80	127	620g
150mm f/2 ED	£2650	NYT		Splashproof telephoto lens with a wide maximum aperture			•				140	82	100	150	1610g

## PENTAX

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation						Min Focus (cm)	Filter Thread (mm)	DIMENSIONS		
					Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma					
					MOUNT										
DA 10-17mm f/3.5-4.5 smc ED IF	£590	NYT		Fisheye zoom lens with Super Protection coating and Quick Shift manual focus			•				14	n/a	71.5	68	320g
DA 12-24mm f/4 smc ED AL IF	£1050	NYT		Two aspherical elements, ELD glass and a constant aperture of f/4 in this wide zoom			•				30	77	83.5	87.5	430g
DA 14mm f/2.8 smc ED IF	£730	7/10	4.5★	Best performance lies between f/5.6 and f/11, but good results can be had at f/4 too			•				17	77	83.5	69	420g
DA 15mm f/4 smc ED AL Limited	£820	NYT		Limited edition lens with hybrid aspherical and extra-low dispersion elements			•				18	49	39.5	63	212g
DA* 16-50mm f/2.8 smc ED AL IF SDM	£950	1/09	3.5★	A nice balance and robust feel, but poor sharpness at f/2.8 (which significantly improves from f/4 onwards)			•				30	77	98.5	84	600g
DA 16-85mm f/3.5-5.6 ED DC WR	£600	NYT	I	Weather-resistant, this zoom features a round shaped diaphragm to produce beautiful bokeh			•				35	72	78	94	488g
DA 17-70mm f/4 smc AL IF SDM	£630	NYT		Featuring Pentax's Supersonic Direct-drive (SDM) focusing system			•				28	67	75	93.5	485g
DA 18-50mm f/4-5.6 DC WR RE	£230	NYT		Super-thin standard zoom that's weather-resistant and features a round shaped diaphragm			•				30	58	71	41	158g
DA 18-55mm f/3.5-5.6 smc II ED AL IF	£220	1/09	3.5★	Something of a bargain. Only the maximum apertures and awkward manual focusing really let it down			•				25	52	68	67.5	220g
DA 18-55mm f/3.5-5.6 smc AL WR	£229	NYT		A weather resistant construction and an aspherical element, as well as SP coating			•				25	52	68.5	67.5	230g
DA 18-135mm f/3.5-5.6 DA ED DC WR	£600	6/11	3.5★	A weather resistant mid-range zoom lens			•				40	62	73	76	405g
DA 18-270mm f/3.5-6.3 smc ED SDM	£699	NYT		15x superzoom for company's K-mount DSLRs featuring two extra-low dispersion (ED) elements			•				49	62	76	89	453g
DA 20-40mm f/2.8-4 ED Limited DC WR	£829	NYT		With state-of-the-art HD coating, a completely round-shaped diaphragm, and weather-resistant			•				28	55	68.5	71	283g
DA 21mm f/3.2 smc AL Limited	£600	NYT		This limited-edition optic offers a floating element for extra-close focusing			•				20	49	63	25	140g
FA 31mm f/1.8 smc AL Limited	£1149	NYT		Aluminium body; when used on a Pentax DSLR offers a perspective similar to that of the human eye			•				30	58	68.5	65	345g
FA 35mm f/2 smc AL	£550	NYT		A compact wideangle lens that weighs a mere 214g			•				30	49	64	44.5	214g
DA 35mm f/2.8 smc Macro	£640	9/08	4.5★	Despite slight edge softness, this lens performs excellently and is a pleasure to use			•				14	49	46.5	63	215g
DA 35mm f/2.4 smc DS AL	£180	3/12	5★	A budget price prime lens for beginners			•				30	49	63	45	124g
DA 40mm f/2.8 smc Limited	£450	NYT		Pancake lens with SMC coating and Quick Shift focusing system			•				40	49	63	15	90g
DA 40mm XS f/2.8 XS	£325	NYT		The world's smallest fixed focal length lens			•				40	N/A	62.9	9	52g
FA 43mm f/1.9 smc Limited	£729	NYT		Focal length is ideal for portraits as well as everyday use, and features an smc multi-layer coating			•				45	49	27	64	155g
FA 50mm f/1.4 smc	£399	NYT		High quality fast prime. The 'FA' indicates that its image circle covers the 35mm full-frame format			•				45	49	63.5	38	220g
DA 50mm f/1.8 smc DA	£249	08/15	4★	Affordable short telephoto lens ideal for portraits			•				45	52	38.5	63	122g
DFA 50mm f/2.8 smc Macro	£550	NYT		Macro lens capable of 1:1 reproduction and with a Quick Shift focus mechanism			•				19	49	60	67.5	265g
DA* 50-135mm f/2.8 smc ED IF SDM	£1200	11/12	4★	Constant f/2.8 aperture; well suited to portraiture and mid-range action subjects			•				100	67	76.5	136	765g
DA 50-200mm f/4-5.6 smc ED WR	£210	NYT		Weather-resistant construction, Quick Shift focus system and an SP coating			•				n/a	49	69	79.5	285g
DA* 55mm f/1.4 smc SDM	£800	2/10	4.5★	Even despite questions about the particular sample tested, this lens scores highly			•				45	58	70.5	66	375g
DA 55-300mm f/4-5.8 smc ED	£370	10/12	4★	The lens boasts a useful focal range, as well as a dirt-resistant SP coating			•				140	58	75	111.5	440g
DA 55-300mm f/4-5.8 ED WR	£399	NYT		Weatherproof HD telephoto lens featuring quick shift focusing system			•				140	58	71	111.5	466g
DA 60-250mm f/4 smc ED IF SDM	£1450	10/12	4.5★	With a constant f/4 aperture and an ultrasonic motor for speedy focusing			•				110	67	167.5	82	1040g
DA 70mm f/2.4 smc AL Limited	£600	NYT		Medium telephoto lens with an aluminium construction and a Super Protect coating			•				70	49	63	26	130g
D-FA* 70-200mm f/2.8 ED DC AW	£1850	NYT		New addition to Pentax's high-performance Star (*) series developed for best image rendition			•				120	77	91.5	203	1755g
FA 77mm f/1.8 smc Limited	£1050	NYT		With Pentax's Fixed Rear Element Extension focusing system for 'sharp, crisp images'			•				70	49	48	64	270g
D-FA 100mm f/2.8 Macro	£700	NYT		Designed for both digital and film cameras, this macro lens boasts a 1:1 repro ratio			•				30	49	67.5	80.5	345g
D-FA 100mm f/2.8 Macro WR	£680	11/12	5★	Street price makes this something of a bargain for a true macro offering full-frame coverage			•				30	49	65	80.5	340g
FA 150-450mm f/4.5-5.6 ED DC AW	£2000	NYT		Super-telephoto lens with weather-resistance, designed to produce extra-sharp, high-contrast images			•				200	86	241.5	95	2000g
DA* 200mm f/2.8 smc ED IF SDM	£1000	8/12	4.5★	SDM focusing system on the inside, and dirtproof and splashproof on the outside			•				120	77	83	134	825g
DA* 300mm f/4 smc ED IF SDM	£1300	NYT		This tele optic promises ultrasonic focus and high image quality thanks to ED glass			•				140	77	83	184	1070g
DA 560mm f/5.6 ED smc AW	£5999	NYT		Prime offering focal length of 859mm when mounted on Pentax K-mount DSLR. Treated with HD coating			•				560	112	130	522	3040g



**All our cameras are genuine UK stock - NEVER Grey Imports**

## 2Years 0% Finance on all L series Lenses

<b>EOS 1DX Body - 2yrs 0%</b>	<b>£4,399</b>	<b>EOS 760D Body</b>	<b>£649</b>	<b>70-200mm f4 IS</b>	<b>£797</b>	<b>85mm f1.4</b>	<b>£237</b>
<b>£400 PX Bonus on 1DX - £400</b>		<b>EOS 700D + 18-135 STM</b>	<b>£668</b>	<b>70-200mm f2.8 L</b>	<b>£945</b>	<b>85mm f1.2L II</b>	<b>£1,499</b>
<b>EOS 5D Mk III plus a</b>	<b>£2,249</b>	<b>8-15mm f4 L Fisheye</b>	<b>£905</b>	<b>70-200mm f2.8 L IS II</b>	<b>£1,499</b>	<b>100mm Macro f2.8</b>	<b>£373</b>
<b>Free BG-E11 Grip</b>		<b>10-18mm f4.5-5.6 IS</b>	<b>£181</b>	<b>70-300mm f4-5.6 IS</b>	<b>£368</b>	<b>100mm Macro f2.8 L IS</b>	<b>£619</b>
<b>EOS 5D III + 24-70 f2.8 II</b>	<b>£3,699</b>	<b>11-24mm f4 L</b>	<b>£2,799</b>	<b>70-300mm f4-5.6 L IS</b>	<b>£894</b>	<b>300mm f4 L IS</b>	<b>£959</b>
		<b>16-35mm f4 L IS</b>	<b>£682</b>	<b>135mm f2</b>	<b>£679</b>	<b>300mm f2.8 L IS II</b>	<b>£4,654</b>
<b>EOS 5Ds + Free Grip</b>	<b>£2,999</b>	<b>16-35mm f2.8 L</b>	<b>£1,064</b>	<b>100-400mm f4.5-5.6 L NEW</b>	<b>£1,849</b>	<b>400mm f4 DO IS II</b>	<b>£6,999</b>
<b>EOS 5Ds R + Free Grip</b>	<b>£3,199</b>	<b>17-40mm f4 L</b>	<b>£499</b>	<b>200-400mm f4 L IS 1.4x</b>	<b>£8,598</b>	<b>400mm f2.8 L IS II</b>	<b>£7,698</b>
		<b>17-55mm f2.8 IS</b>	<b>£502</b>	<b>24mm f2.8 IS</b>	<b>£429</b>	<b>500mm f4 L IS II</b>	<b>£6,898</b>
<b>EOS 7D Mk II</b>	<b>£1,299</b>	<b>24-70mm f4 L IS</b>	<b>£675</b>	<b>24mm f1.4 L II</b>	<b>£1,179</b>	<b>600mm f4 L IS II</b>	<b>£8,895</b>
<b>EOS 6D £100 Cash back</b>	<b>£1,139</b>	<b>24-70mm f2.8 L II</b>	<b>£1,400</b>	<b>35mm f2 IS</b>	<b>£399</b>	<b>800mm f5.6 L IS</b>	<b>£9,899</b>
		<b>24-105mm f4 IS</b>	<b>£749</b>	<b>35mm f1.4L II</b>	<b>£1,799</b>	<b>2x III WITH LONG PRIMES FREE</b>	
<b>EOS 70D £60 Cash back</b>	<b>£729</b>	<b>18-200mm IS</b>	<b>£356</b>	<b>50mm f1.4</b>	<b>£237</b>	<b>1.4x III £302 2xIII Extender</b>	<b>£314</b>
<b>EOS 70D + 18-135 STM</b>	<b>£939</b>	<b>70-200mm f4L</b>	<b>£439</b>	<b>50mm f1.2L</b>	<b>£995</b>	<b>600EX-RT Speedlite</b>	<b>£445</b>

**D4S - D810 - D750 - D610 - D7200 - D5500 - LENSES - FLASHGUNS - ACCESSORIES**

D4S Body	£4,399	D5500 + 18-55mm VR II	£569	70-300mm f4.5-5.6 VR	£399	200mm f2 G ED VR II	£4,099
<b>2 YEAR UK WARRANTY</b>		D5500 + 18-140mm	£699	80-400mm f4.5-5.6 AFD VR	£1,799	300mm f2.8 G VR II	£3,799
Df + 50mm f1.8	£1,999	D3300 + 18-55mm VR II	£319	200-500mm f5.6E ED VR	£1,179	400mm f2.8 FL ED VR	£9,499
D810 Body £350 Px Bonus	£2,349	10-24mm f3.5-4.5 DX	£599	20mm f1.8 G	£539	500mm f4E FL ED VR	£8,149
D810 + 24-120mm f4	£2,999	14-24mm f2.8	£1,299	24mm f1.4 G	£1,379	600mm f4E FL ED VR	£9,649
D810 + 24-70mm f2.8	£3,579	16-35mm f4 VR	£795	28mm f1.8 G	£495	800mm f5.6 FL VR + TC1.25	£12,995
D810 + 14-24mm f2.8	£3,679	16-85mm f3.5-5.6 VR DX	£399	35mm f1.8 G ED	£399	PC-E 24mm f3.5	£1,479
D750 Body £150 PX Bonus	£1,499	18-35mm f3.5-4.5	£489	35mm f1.4 G	£1,295	PC-E 45mm f2.8	£1,399
D750 + 24-120mm f4	£1,877	18-140mm f3.5-5.6 VR	£419	50mm f1.8 G	£135	2x TC-20 E III Converter	£329
D610	£1,049	18-200mm f3.5-5.6 VR II DX	£549	50mm f1.4 G	£275	1.4x TC-14 E III Converter	£429
D610 + 24-120mm f4	£1,769	18-300mm f3.5-5.6 VR DX	£649	58mm f1.4 G	£1,135	SB910 Speedlight	£339
D7200 Body	£775	24-70mm f2.8E ED VR	£1,849	85mm f1.8 G	£339	SB700 Speedlight	£229
D7200 + 18-105mm VR	£929	24-120mm f4 VR	£729	85mm f1.4 G	£1,149	SB-R1CT Commander	£549
D7100 Body	£619	28-300mm f3.5-5.6 VR	£649	<b>NEW</b> 300mm f4 EPFED VR	£1,639	SU-800 Commander Unit	£269
D7100 + 18-105mm VR	£799	70-200mm f2.8 VR II	£1,578	105mm f2.8 Micro VR	£619	WT-5	£449
		70-200mm f4 VR	£859	85mm f3.5 Micro VR DX	£349	<b>UK STOCK UK STOCK</b>	

**rotto**

H5D-40 Body Set	£7,795	S (type 007) Body	£12,200	X-T1 + 18-135mm	£1,249	<b>NEW</b> Session Camera	£229	190XP3	£159	494RC2	£46
H5D-40 + 80mm f2.8 Lens	£8,795	S-E Body + 70mm S Lens	£7,995	X-T1 + 18-55mm	£1,149	Hero4 Black	£329	190XP4	£169	496RC2	£57
H5D-50	£13,995	M-P (type 240) Silver/Black	<b>£4,749</b>	X-T1 Body	£842	Hero4 Silver	£250	190XCPR3	£299	498RC2	£79
H5D-50 Multi-Shot	£22,566	M (type 240) Silver/Black	<b>£4,299</b>	X-T1 Graphite Body	£999	Hero+	£149	190CXP3	£299	460MG	£299
H5D-50c	£17,598	<b>Special Prices End 30.10.15</b>		X-PRO1 + 18mm + 27mm	£839	See Website for full list of GoPro Mounts and accessories					£109
H5D-50c Wi-Fi	£18,354	Monochrome (type 246) Black	£5,950	X-PRO1 + 18mm + 27mm	£649						£157
H5D-50c Multi-Shot	£26,779	Monochrome body Black	£4,250	X-PRO1 + 18mm + 27mm	£329						£109
H5D-60	£25,698	T body + 23mm Lens	£2,249	XF 16-55mm f2.8 R LM WR	£741						£153
H5D-200 Multi-Shot	£27,858	T body + 18-56mm Lens	£2,299	XF 10-24mm f4 OIS	£714	Free Carbon Free monopod with carbon tripods					£105
H5D 50C + 28mm + 80mm	£19,554	X 2	£1,349	XF 35mm f1.4	£379						£122
CFV-50c Digital Back	£6,995	X Vario Silver/Black	£1,499	XF 50-140mm f2.8 OIS	£1,099						
		X (type 113) Silver/Black	£1,529	XF 55-200mm f3.5-4.8 OIS	£486						
		X-E (type 102)	£1,099	XF 14mm f2.8	£648	<b>SIGMA</b>					
		D-Lux (type 109)	£779	XF 16mm f1.4 R WR	£729						

In store demo available. See Website for full list of lenses and accessories.

112

<b>ZENOS</b>		See Website for full list of Leica lenses and accessories		XF 56mm f1.2 £723		10-20mm f4.5-6 DC £349		Roger EVO3 £279		<b>PUNKS</b>	
Canon/Nikon Fit				XF 90mm f2 R LM WR £649		10-20mm f4.5-6 DG £349		Brian EVO3 £379		Vivv EVO3 £149	
OTUS 55mm f1.4 £2,699				See website for full listing		10-20mm f3.5 D.C. £384		Jack EVO3 £249		Rick EVO3 £199	
OTUS 85mm f1.4 £3,019				Cash back available		12-24mm f4.5-5.6 DG Mktl £569					
15mm f2.8 £2,069						17-70mm f2.8-4 DC C £329					
18mm f3.5 £1,999						18-35mm f1.8 DC Art £609					
21mm f2.8 £1,346						18-250mm f3.5-6.3 DC £299					
25mm f2 £1,188						18-300mm f3.5-6.3 DC C £775					
35mm f2 £1,292						24-35mm f2 DG Art £399					
35mm f2 £799						24-105mm f4 DG Art £679					
35mm f1.4 £1,346						50-500mm f4.5-6.3 DG £649					
50mm f1.4 £520						70-200mm f2.8 DG £799					
50mm f2 Makro £920						150-600mm f5-6.3 DG C £879					
85mm f1.4 £920						150-600mm f5-6.3 DG S £1,399					
100mm f2 Makro £1,346						35mm f1.4 DG Art £636					
135mm f2 £1,599						50mm f1.4 DG Art £669					
						24mm f1.4 DG Art £699					
						105mm f2.8 Macro DG £349					
<b>Fuji/Sony Mount</b>											
Toutit 12mm f2.8 £649											
Toutit 32mm f1.8 £449											
Toutit 50mm f2.8 Macro £599											
We also stock ZM mount lenses for M42 & M-mount cameras											

**USED EQUIPMENT** - Quality photographic equipment wanted for part exchange or commission sales

[illegible]

B1 Location Kit £3,060 B2 Location kit £1,994  
Full list of Accessories available on our website  
HR and Rfi Softboxes, umbrellas, reflectors,  
grids and kits



SAMYANG

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	MOUNT						Min focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
						Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma					
8mm f/3.5 UMC Fisheye CS II	£274	NYT		Wideangle fisheye lens designed for digital reflex cameras with APS-C sensors		•	•	•	•			30	N/A	75	77.8	417g
10mm f/2.8 ED AS NCS CS	£429	NYT		Features a nano crystal anti-reflection coating system and embedded lens hood		•	•	•	•			24	N/A	86	77	580g
14mm f/2.8 ED UMC	£279	NYT		Ultra wideangle manual focus lens; bulb-like front element means no filters can be used		•	•	•	•			28	N/A	94	87	552g
16mm f/2.0 ED AS UMC CS	£389	NYT		Ultra wideangle lens for digital reflex cameras and mirrorless compact cameras fitted with APS-C sensors		•	•	•	•			20	N/A	89.4	83	583g
24mm f/1.4 AS UMC	£499	NYT		Fast ultra wideangle manual focus lens comprising 13 lenses arranged in 12 groups		•	•	•	•	•		25	77	95	116	680g
24mm f/3.5 AS T-S ED AS UMC	£789	NYT		Wideangle tilt-shift prime featuring 16 glass elements and f/3.5 maximum aperture		•	•	•	•	•		20	82	110.5	113	680g
35mm f/1.4 AS UMC	£369	3/13	4.5★	While manual focus only, this prime impressed us in real-world use, making it something of a bargain		•	•	•	•	•		30	77	83	111	660g
35mm T1.5 AS UMC VDSLR	£419	NYT		VDSLR version of 35mm f/1.4 AS UMC with de-clicked aperture ring for silent operation when used for video		•	•	•	•	•		30	77	83	111	660g
85mm f/1.4 IFMC	£239	NYT		Short fast telephoto prime, manual focus, aimed at portrait photographers		•	•	•	•	•		100	72	78	72.2	513g
100mm f/2.8 ED UMC Macro	£389	NYT		Full-frame compatible, the Samyang 100mm is a close-up true Macro lens		•	•	•	•	•		30	67	72.5	123.1	720g

SIGMA

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	MOUNT						Min focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
						Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma					
4.5mm f/2.8 EX DC	£739	NYT		Circular fisheye lens designed for digital, with SLD glass and a gelatin filter holder		•		•	•			13	n/a	76	77.8	470g
8mm f/3.5 EX DG	£799	NYT		The world's only 8mm lens equipped with autofocus also boasts SLD glass		•		•	•	•		13	n/a	73.5	68.6	400g
8-16mm f/4.5-5.6 DC HSM	£800	10/10	4★	Excellent performance at 8mm which sadly drops at the 16mm end		•		•	•	•		24	72	75	105.7	555g
10mm f/2.8 EX DC	£599	NYT		A Hyper Sonic Motor (HSM) and built-in hood in this diagonal fisheye lens		•		•	•			13	n/a	75.8	83	475g
10-20mm f/3.5 EX DC HSM	£650	3/10	5★	An absolute gem of a lens that deserves a place on every photographer's wish list		•		•	•	•		24	82	87.3	88.2	520g
10-20mm f/4-5.6 EX DG HSM	£550	8/09	5★	A fine all-rounder, thanks to MTF curves which stay above 0.25 cycles-per-pixel down to f/16		•	•	•	•	•		24	77	83.5	81	470g
12-24mm f/4.5-5.6 EX DC HSM	£868	8/09	4★	A tightly matched set of MTF curves, but APS-C users are advised to look at the 10-20mm instead		•	•	•	•	•		28	n/a	87	102.5	600g
15mm f/2.8 EX DG	£629	7/10	4★	This fisheye optic puts in a very solid performance – not to be dismissed as a gimmick!		•	•	•	•	•		15	n/a	73.5	65	370g
17-50mm f/2.8 EX DC OS HSM	£689	NYT		FLD and aspherical elements, a constant f/2.8 aperture and Optical Stabilisation	•	•	•	•	•	•		28	77	83.5	92	565g
17-70mm f/2.8-4 DC Macro OS HSM	£449	NYT		Redesign of this well-received lens launches the 'Contemporary' range and sees it in more compact form	•	•	•	•	•	•		22	72	79	82	470g
18-35mm f/1.8 DC HSM	£799	11/13	5★	Said to be the world's first constant f/1.8 zoom; DOF equivalent of constant f/2.7 on full frame		•		•	•	•		28	72	78	121	810g
18-200mm f/3.5-6.3 DC	£349	3/08	3★	Good CA control at 200mm but otherwise an average performer		•		•	•	•		45	62	70	78.1	405g
18-200mm f/3.5-6.3 DC OS	£449	3/08	4★	Excellent resolution and consistent performance, but control over CA could be a little better	•	•	•	•	•	•		45	45	79	100	610g
18-250mm f/3.5-6.3 DC OS HSM	£572	1/10	4.5★	A very capable set of MTF curves that only shows minor weakness at wide apertures	•	•	•	•	•	•		45	72	79	101	630g
18-250mm f/3.5-6.3 DC Macro OS HSM	£500	NYT		Ultra-compact 13.8x high zoom ratio lens designed exclusively for digital SLR cameras	•	•	•	•	•	•		35	62	73.5	88.6	470g
18-300mm f/3.5-6.3 DC Macro OS HSM	£499	NYT		Compact and portable high ratio zoom lens offering enhanced features to make it the ideal all-in-one lens	•	•	•	•	•	•		39	72	79	101.5	585g
24mm f/1.4 DG HSM   A	£799	06/15	5★	The latest addition to Sigma's 'Art' line of high-quality fast primes		•		•	•	•		25	77	85	90.2	665g
24-35mm f/2 DG HSM   A	£949	12/15	5★	The world's first large-aperture full-frame zoom offering a wide aperture of f/2 throughout the zoom range		•		•	•	•		28	82	87.6	122.7	940g
24-70mm f/2.8 EX DG IF HSM	£899	8/09	5★	Not perfect, but an excellent alternative to Canon and Nikon's 24-70mm lenses, with great MTF curves		•	•	•	•	•		38	82	88.6	94.7	790g
24-105mm f/4 DG OS HSM   A	£849	3/14	4.5★	Serious full frame alternative to own-brand lenses at a lower price but with no compromises in the build	•	•	•	•	•	•		45	82	89	109	885g
30mm f/1.4 EX DC HSM	£490	9/08	3★	A consistent performer, with slightly weaker but not unacceptable performance wide-open		•	•	•	•	•		40	62	76.6	59	430g
35mm f/1.4 DG HSM   A	£799	9/13	5★	Large aperture prime; first lens in company's 'Art' series		•		•	•	•		30	67	77	94	665g
50mm f/1.4 EX DC HSM	£459	2/10	5★	This lens may be priced above the norm, but it delivers results which are similarly elevated		•	•	•	•	•		45	77	84.5	68.2	505g
50mm f/1.4 DG HSM Art	£849	7/14	4★	This lens is a unique design that pays off in truly excellent image quality		•	•	•	•	•		40	77	85.4	100	815g
50-500mm f/4.5-6.3 DG OS HSM	£1499	4/11	4★	A 10x zoom range, SLD elements and compatibility with 1.4x and 2x teleconverters	•	•	•	•	•	•		50-180	95	104.4	219	1970g
70-200mm f/2.8 EX DG OS HSM	£1539	NYT		Two FLD glass elements, said to have the same dispersive properties as fluorite	•	•	•	•	•	•		140	77	86.4	197	1430g
70-300mm f/4-5.6 APO DG Macro	£235	NYT		A 9-bladed diaphragm and two SLD elements in this tele-zoom lens		•	•	•	•	•		95	58	76.6	122	550g
70-300mm f/4-5.6 DG Macro	£173	5/09	3★	Generally unremarkable MTF curves, and particularly poor at 300mm		•	•	•	•	•		95	58	76.6	122	545g
85mm f/1.4 EX DG HSM	£890	2/11	5★	The Sigma's resolution from f/4 to f/8 is excellent		•	•	•	•	•		85	77	86.4	87.6	725g
105mm f/2.8 EX DG OS HSM	£649	12/11	4.5★	An optically-stabilised macro lens	•	•	•	•	•	•		31.2	62	78	126.4	725g
120-300mm f/2.8 DG HSM	£3599	NYT		First lens in company's 'Sports' series; switch enables adjustment of both focus speed and focus limiter		•	•	•	•	•		150-250	105	124	291	TBA
150mm f/2.8 EX DG OS HSM	£999	NYT		A macro lens offering image stabilisation	•	•	•	•	•	•		38	72	79.6	150	950g
150-500mm f/5-6.3 DG OS HSM	£999	6/09	3★	Significant softness at wide maximum apertures for all focal lengths	•	•	•	•	•	•		220	86	94.7	252	1780g
150-600mm f/5-6.3 DG OS HSM   S	£1599	1/15	4★	This portable, high-performance telephoto zoom from Sigma's Sports line is dust and splashproof	•	•	•	•	•	•		260	105	121	290.2	2860g
180mm f/2.8 EX DG OS HSM	£1499	4/13	5★	1:1 macro lens featuring three FLD glass elements and floating inner focusing system	•	•	•	•	•	•		47	86	95	204	1640g
300mm f/2.8 APO EX DG	£2899	NYT		Extra Low Dispersion (ELD) glass, multi-layer coatings and a Hyper Sonic Motor		•	•	•	•	•		250	46	119	214.5	2400g
300-800mm f/5.6 EX DG HSM	£6999	NYT		A constant aperture of f/5.6 throughout the expansive 300-800mm zoom range		•	•	•	•	•		600	46	156.5	544	5880g
500mm f/4.5 APO EX DG	£4799	NYT		Telephoto lens with multi-layer coatings to 'optimise the characteristics of DSLRs'		•	•	•	•	•		400	46	123	350	3150g
800mm f/5.6 APO EX DG	£5499	NYT		HSM and compatibility with Sigma's 1.4x EX APO and 2x EX APO teleconverters		•	•	•	•	•		700	46	156.5	521	4900g

SONY

SONY					Image Stabilisation						Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight	
LENS	RRP	TESTED	SCORE	SUMMARY	Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma	E-mount Only					
11-18mm f/4.5-5.6 DT	£609	9/09	3★	A solid overall performance that simply fails to be outstanding in any way	•							25	77	83	80.5	360g
16mm f/2.8 Fisheye	£709	NYT		Fisheye lens with a close focusing distance of 20cm and a 180° angle of view	•							20	n/a	75	66.5	400g
16-35mm f/2.8 ZA SSM T*	£1729	9/09	4.5★	High-end Zeiss wideangle zoom lens ideal for full frame Alpha DSLRs								28	77	83	114	900g
16-50mm f/2.8 SSM	£569	4/12	4★	Bright short-range telephoto lens	•							100	72	81	88	577g
16-80mm f/3.5-4.5 ZA T*	£709	4/09	4.5★	Carl Zeiss standard zoom lens	•							35	62	72	83	445g
16-105mm f/3.5-5.6 DT	£559	3/09	3★	An ambitious lens that is good in parts. Quality drops off at 105mm	•							40	62	72	83	470g
18-135mm f/3.5-5.6 DT SAM	£429	NYT		A versatile zoom with Direct Manual Focus	•	•						45	62	76	86	398g
18-200mm f/3.5-6.3 DT	£509	4/08	3★	While the focal range is certainly useful, the lens is an overall average performer	•							45	62	73	85.5	405g
18-250mm f/3.5-6.3 DT	£559	1/10	3.5★	Good overall, but performance dips at longer focal lengths	•							45	62	75	86	440g
20mm f/2.8	£559	9/11	3.5★	Wideangle prime lens with rear focusing mechanism and focus range limiter	•							25	72	78	53.5	285g
24mm f/2 ZA SSM T*	£1119	NYT		An impressively bright wideangle Carl Zeiss lens	•							19	72	78	76	555g
24-70mm f/2.8 ZA SSM T*	£1679	7/09	5★	Carl Zeiss mid-range zoom lens with superb optics ideal for full frame Alpha DSLRs	•							34	77	83	111	955g
28-75mm f/2.8 SAM	£709	NYT		A constant f/2.8 aperture and a Smooth Autofocus Motor (SAM) in this standard zoom	•							38	67	77.5	94	565g
30mm f/2.8 DT SAM Macro	£179	3/12	4★	Macro lens designed for digital with 1:1 magnification and Smooth Autofocus Motor	•							12	49	70	45	150g
35mm f/1.4 G	£1369	NYT		With an equivalent focal length of 52.5mm, a wide aperture and aspherical glass	•							30	55	69	76	510g
35mm f/1.8 DT SAM	£179	NYT		Budget price indoor portrait lens	•							23	55	70	52	170g
50mm f/1.8 DT SAM	£159	3/10	4.5★	A very useful lens that performs well and carries a rock-bottom price tag	•							34	49	70	45	170g
50mm f/1.4	£369	2/10	5★	While this lens performs well overall, performance at f/1.4 could be better	•							45	55	65.5	43	220g
50mm f/1.4 ZA SSM	£1300	Web	4★	Carl Zeiss design said to be ideal for quality-critical portraiture and low-light shooting	•							45	72	81	71.5	518g
50mm f/2.8 Macro	£529	NYT		A macro lens with a floating lens element	•							20	55	71.5	60	295g
55-200mm f/4-5.6 DT SAM	£219	NYT		Designed for cropped-sensor DSLRs, with a Smooth Autofocus Motor	•							95	55	71.5	85	305g
55-300mm f/4.5-5.6 DT SAM	£309	NYT		Compact, lightweight telephoto zoom offering smooth, silent operation	•							140	62	77	116.5	460g
70-200mm f/2.8 G	£1889	NYT		Super Sonic Wave motor and a constant f/2.8 aperture in this pro-grade tele zoom	•							120	77	87	196.5	1340g
70-200mm f/2.8 G SSM II	£TBC	NYT		High-performance G Series telephoto zoom lens	•							120		87	196.5	1340g
70-200mm f/4 G OSS	£949	10/14	4★	Compact, lightweight telephoto zoom lens for full-frame E-mount bodies	•	•						100	72	80	175	840g
70-300mm f/4.5-5.6 G SSM	£869	12/10	3.5★	G-series lens with ED elements, Super Sonic wave Motor and a circular aperture	•							120	62	82.5	135.5	760g
70-400mm f/4-5.6 G SSM II	£1799	NYT		Redesign of original features a new LSI drive circuit and promises faster autofocus	•							150	77	95	196	1500g
75-300mm f/4.5-5.6	£219	8/12	3★	Compact and lightweight zoom with a circular aperture	•							150	55	71	122	460g
85mm f/1.4 ZA Planar T*	£1369	NYT		Fixed focal length lens aimed at indoor portraiture	•							85	72	81.5	72.5	560g
85mm f/2.8 SAM	£219	NYT		A light, low price portraiture lens	•							60	55	70	52	175g
100mm f/2.8 Macro	£659	NYT		Macro lens with circular aperture, double floating element and wide aperture	•							35	55	75	98.5	505g
135mm f/1.8 ZA Sonnar T*	£1429	NYT		A bright, Carl Zeiss portrait telephoto lens	•							72	77	84	115	1004g
135mm f/2.8 STF	£1119	NYT		Telephoto lens with defocus effects	•							87	80	80	99	730g

TAMRON

TAMRON					Image Stabilisation	MOUNT					Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight	
LENS	RRP	TESTED	SCORE	SUMMARY	Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma	Fd Frame Only					
10-24mm f/3.5-4.5 SP AF Di II LD Asph. IF	£511	2/10	3.5★	Good consistency at 10mm and 18mm, but a steep decline at 24mm	•	•		•				24	77	83.2	86.5	406g
14-150mm f/3.5-5.8 Di III	£370	NYT		The first Micro Four Thirds lens from Tamron, for compact mirrorless interchangeable-lens cameras			•					50	52	63.5	80.4	285g
15-30mm f/2.8 SP Di VC USD	£950	07/15	4★	Excellent value, this is the only wideangle zoom with image stabilisation and an f/2.8 aperture	•	•	•	•				28	N/A	98.4	145	1100g
16-300mm f/3.5-6.3 Di II VC PZD Macro	£600	8/14	4★	Versatile megazoom, a very good all-in-one solution, as long as you won't need to enlarge to A2 size	•	•	•	•				39	67	99.5	75	540g
17-50mm f/2.8 SP AF XR Di II LD Asph. IF	£450	2/09	4.5★	Very good optical performance, which peaks at f/5.6-8	•	•	•	•				27	67	74	81.7	434g
17-50mm f/2.8 SP AF XR Di II VC LD Asph. IF	£541	4/10	4.5★	Very strong performance at longer focal lengths but weaker at the other end	•	•	•	•				29	72	79.6	94.5	570g
18-200mm f/3.5-6.3 AF XR Di III LD Asph. IF Macro	£306	3/08	3★	Excellent CA control in the centre, but unremarkable wideangle performance	•	•	•	•				45	62	73	83.7	423g
18-200mm f/3.5-6.3 AF Di II VC Asph. IF Macro	£300	NYT		Lightweight all-in-one lens with Vibration Compensation	•	•	•	•				49	62	75	96.6	400g
18-270mm f/3.5-6.3 AF XR Di III LD Asph. IF Macro	£613	1/10	4.5★	Much better results at shorter focal lengths than longer ones, but still impressive	•	•	•	•				49	72	79.6	101	550g
18-270mm f/3.5-6.3 AF Di II VC LD PZD IF Macro	£663	10/11	3★	The next-generation incarnation offers a new form of ultrasonic engine	•	•	•	•				49	62	74.4	88	450g
24-70mm f/2.8 SP Di VC USD	£1099	10/12	5★	Fast zoom with image stabilisation for both full-frame and APS-C cameras	•	•	•	•				38	82	88.2	116.9	825g
28-75mm f/2.8 SP AF XR Di LD Asph. IF Macro	£460	NYT		Standard zoom with constant f/2.8 aperture and minimum focusing distance of 33cm			•	•	•		•	33	67	73	92	510g
28-300mm f/3.5-6.3 AF XR Di LD Asph. IF Macro	£664	NYT		A useful 10.7x zoom range and low-dispersion elements in this optic			•	•	•		•	49	62	73	83.7	420g
28-300mm f/3.5-6.3 Di VC PZD	£529	NYT		A new, full-frame, high-power zoom incorporating PZD (Piezo Drive)	•	•	•	•			•	49	67	75	99.5	540g
60mm f/2 SP AF Di II LD IF Macro	£550	12/10	5★	Macro lens designed for APS-C sensor cameras, with 1:1 reproduction ratio								23	55	73	80	400g
70-200mm f/2.8 SP AF Di LD IF Macro	£817	10/09	4★	No image stabilisation and no advanced AF system, but at this price it's a steal		•	•	•	•		•	95	77	89.5	194.3	1150g
70-200mm f/2.8 Di VC USD	£TBC	NYT		Compact yet full-size telephoto zoom with vibration compensation		•	•	•				130	77	85.8	188.3	1470g
70-300mm f/4-5.6 SP VC USD	£300	1/12	4★	Ultrasonic Silent Drive (USD) technology for focusing and Vibration Compensation		•	•	•			•	150	62	81.5	142.7	765g
70-300mm f/4-5.6 AF Di LD Macro	£170	11/10	3.5★	Low dispersion glass and compatible with both full-frame and cropped-sensor DSLRs		•	•	•			•	95	62	76.6	116.5	435g
90mm f/2.8 SP AF Di Macro	£470	11/09	4★	A very nice macro lens that is capable of producing some fine images		•	•	•			•	29	55	71.5	97	405g
90mm f/2.8 Di Macro 1:1 VC USD	£TBC	NYT		Redesign of the 90mm f/2.8 SP AF Di Macro; comes with vibration compensation		•	•	•			•	30	58	115	76.4	550g
150-600mm f/5-6.3 SP VC USD	£1150	6/14	4★	Longest focal length of any affordable enthusiast zoom on the market and produces excellent results	•	•	•	•				270	95	105.6	257.8	1951g
180mm f/3.5 SP AF Di LD IF Macro	£896	11/10	5★	Two Low Dispersion elements and internal focusing system in this 1:1 macro lens		•	•	•			•	47	72	84.8	165.7	920g
200-500mm f/5-6.3 SP AF Di LD IF	£1124	6/09	4.5★	A well-matched and consistent set of MTF curves, with good performance at f/8-11		•	•	•			•	250	86	93.5	227	1237g



TOKINA					Image Stabilisation	MOUNT					Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
LENS	RRP	TESTED	SCORE	SUMMARY		Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma	Full Frame Only			
AT-X 107 (10-17mm) f/3.5-4.5 AF DX Fisheye	£550	NYT		Fisheye zoom lens with Water Repellent coating and Super Low Dispersion glass		•			•			•	14	n/a	70
AT-X 116 (11-16mm) f/2.8 PRO DX	£515	6/12	4.5★	Wide zoom with a One-Touch Focus clutch mechanism and a constant f/2.8 aperture		•			•				30	77	89.2
AT-X 12-28mm f/4 PRO DX	£529	NYT		Replacement for 12-24mm F4 wideangle zoom; for Nikon DX DSLRs					•				25	77	84
AT-X 16-28mm f/2.8 PRO FX	£757	6/11	5★	A pro-end wideangle zoom aimed at full frame cameras		•			•			•	26	n/a	90
AT-X 17-35mm f/4 PRO FX	£830	11/12	5★	One of the most capable super-wide zooms available, though only available in Canon and Nikon mounts		•			•				28	82	89
AT-X 16.5-135 (16.5-135mm) f/3.5-5.6	£610	9/11	3.5★	Three aspherical and two SD elements, together with a useful focal range		•			•				50	77	84
AT-X M100 (100mm) f/2.8 AF PRO D Macro	£360	11/09	4★	Some weaknesses wide-open, but reasonable MTF curves make this a decent optic		•			•			•	30	55	73

ZEISS					Image Stabilisation	MOUNT					Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
LENS	RRP	TESTED	SCORE	SUMMARY		Sony Alpha	Canon	Four Thirds	Nikon	Pentax	Sigma	Full Frame Only			
12mm f/2.8 Touit Distagon T*	£959	5/14	5★	Designed specifically for Sony NEX and Fujifilm X-series CSC cameras. Very impressive performance				•					18	67	68
18mm f/3.5 ZF.2	£1150	8/10	5★	No AF, but the optical and build qualities of this lens are nothing short of stunning					•	•		•	30	82	84
21mm f/2.8 Distagon T*	£1579	NYT		A wideangle lens that doesn't compromise on optical quality				•	•	•		•	30	82	87
25mm f/2 Distagon T*	£1350	NYT		A landscape lens with a fast aperture				•	•	•		•	25	67	71
25mm f/2.8 Distagon T*	£750	NYT		A macro lens offering unrivalled quality				•	•	•		•	17	58	83
28mm f/2 Distagon T*	£850	NYT		For low light shooting the 28mm lens has plenty of potential				•	•	•		•	24	58	64
32mm f/1.8 Touit Planar T*	£700	7/14	4.5★	Optimised for use with APS-C format sensors, a fast standard lens for Fujifilm X-series cameras					•				23	52	72
35mm f/1.4 Distagon T*	£1600	NYT		Promises to produce some stunning bokeh effects				•	•	•		•	30	72	120
35mm f/2 Distagon T*	£940	NYT		An extremely fast focusing lens				•	•	•		•	30	58	64
50mm f/1.4 Planar T*	£650	NYT		A portrait lens in its element in low light				•	•	•		•	45	72	66
50mm f/2 Makro-Planar	£665	NYT		A macro lens with impressive-looking levels of sharpness				•	•	•		•	24	67	72
100mm f/2 Makro-Planar	£1399	NYT		A rapid-focus portrait lens				•	•	•		•	44	72	76

# CSC Lens Listings

The range of lenses for CSC models is constantly evolving, so you have a fairly good choice when it comes to lenses for your CSC

CANON CSC					Image Stabilisation	MOUNT					Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
LENS	RRP	TESTED	SCORE	SUMMARY		Canon M	Micro Four Thirds	Samsung NX	Sony E	Pentax Q	Nikon 1	Fuji X Mount	Full frame only		
EF-M 18-55mm f/3.5-5.6 IS STM	£269	NYT		Compact and versatile zoom lens		•	•							25	52
EF-M 11-22mm f/4-5.6 IS STM	£355	NYT		Ultra-wideangle lens with a compact, retractable lens design		•	•							15	55
EF-M 22mm f/2 STM	£220	NYT		Small and bright wideangle pancake lens		•	•							15	43
EF-M 55-200mm f/4.5-6.3 IS STM	£330	NYT		Telephoto zoom that takes you closer to the action		•	•							100	52

FUJI CSC					Image Stabilisation	MOUNT					Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
LENS	RRP	TESTED	SCORE	SUMMARY		Canon M	Micro Four Thirds	Samsung NX	Sony E	Pentax Q	Nikon 1	Fuji X Mount	Full frame only		
XF 10-24mm f/4 R OIS	£849	NYT		Ultra wideangle lens, minimal ghosting with Fujis HT-EBC multi-layer coating		•						•	•	24	72
XF 14mm f/2.8 R	£729	7/13	5★	Ultra wideangle prime, high resolution to all corners, performance justifies price tag								•	•	18	58
XF 16mm f/1.4 R WR	£729	10/15	5★	Weather-sealed fast prime for X-system users								•	•	15	67
XC 16-50 f/3.5-5.6 OIS	£359	NYT		Lightweight lens for mirrorless X-series offers 24-75mm equivalent zoom range		•						•	•	30	58
XF 16-55mm f/2.8 R LM WR	£899	06/15	5★	A flagship XF standard zoom lens with a constant f/2.8 aperture and weather-resistance								•	•	60	77
XF 18mm f/2 R	£430	6/13	4★	A compact, wideangle lens with a quick aperture								•	•	18	52
XF 18-135mm f/3.5-5.6 R LM OIS WR	£699	Xmas14	4★	Weather-resistant zoom for Fujifilm X mount, designed to be the perfect partner for the Fujifilm X-T1		•						•	•	45	77
XF 18-55mm f/2.8-4 R	£599	NYT		Short zoom lens with optical image stabilisation								•	•	18	58
XF 23mm f/1.4 R	£649	NYT		Premium wide-angle prime lens with fast maximum aperture								•	•	28	62
XF 27mm f/2.8	£270	NYT		A high-performance single-focal-length lens								•	•	60	39
XF 35mm f/1.4 R	£439	6/13	4★	Shallow depth of field and bokeh effects are simple to achieve with this lens								•	•	28	52
XF 50-140mm f/2.8 R LM OIS WR	£1249	NYT		A telephoto zoom with a constant maximum aperture and weather-resistance								•	•	100	72
XC 50-230mm f/4.5-6.7 OIS	£315	NYT		The XC lens range is designed to suit Fuji's mid range CSCs, and this lens has optical image stabilization		•						•	•	110	58
XF 55-200mm f/3.5-4.8 R LM OIS	£599	11/13	4★	Telephoto with built-in optical image stabilisation plus aperture control ring		•						•	•	110	62
XF 56mm f/1.2 R	£899	9/14	4★	This wide-aperture portrait lens for X series cameras has great sharpness and detail and is great value								•	•	70	62
XF 56mm f/1.2 R APD	£1090	NYT		Medium-telephoto prime lens, with fast f/1.2 lens and built-in APD filter producing creamy bokeh								•	•	70	62
XF 60mm f/2.4 XF R Macro	£599	NYT		A short telephoto lens perfect for macro work								•	•	26.7	39

NIKON CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	MOUNT						Min Focus (cm)	Filter Thread (mm)	DIMENSIONS		
						Canon M	Micro 4 Thirds	Samsung NX	Sony E	Pentax Q	Nikon 1			Width (mm)	Length (mm)	Weight
6.7-13mm f/3.5-5.6 VR 1	£459	NYT		Compact, lightweight, ultra-wideangle zoom lens with Vibration Reduction for Nikon 1 system	•						•	25	52	56.5	46	125g
10mm f/2.8	£229	2/12	4★	A wideangle lens for Nikon's 1 series of Compact System Cameras							•	20	40.5	55.5	22	77g
10-30mm f/3.5-5.6 VR	£149	NYT		Nikon's kit lens for the 1 series of CSC models	•						•	20	40.5	57.5	42	115g
10-100mm f/4.5-5.6 VR PD-ZOOM	£679	NYT		A powered zoom lens aided by the VR image stabilisation system on 1 system compacts	•						•	300	72	77	95	530g
10-100mm f/4-5.6 VR 1	£499	NYT		CX-format zoom lens with focal length range of 10-100mm (27-270mm 35mm equivalent)	•						•	35	55	60.5	70.5	298g
11-27.5mm f/3.5-5.6	£179	NYT		Compact standard zoom for Nikon 1 system							•	30	40.5	57.5	31	80g
18.5mm f/1.8	£179	NYT		Nikon's 1 series gains a traditional fast prime							•	20	40.5	56	36	70g
30-110mm f/3.8-5.6 VR	£229	NYT		A longer zoom lens, with image stabilisation, for the Nikon 1 series	•						•	100	40.5	60	61	180g
32mm f/1.2	£799	NYT		First 1 system lens to offer a silent wave motor and nano crystal coating							•	45	52	66	47	235g
70-300mm f/4.5-5.6 VR	£TBC	NYT		CX-format super-telephoto lens with a surprisingly compact body	•						•	7	62	73	108	550g

OLYMPUS CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	MOUNT						Min Focus (cm)	Filter Thread (mm)	DIMENSIONS		
						Canon M	Micro 4 Thirds	Samsung NX	Sony E	Pentax Q	Nikon 1			Width (mm)	Length (mm)	Weight
7-14mm f/2.8 ED Pro	£999	Web	4.5★	Super-wide-angle zoom lens that is dustproof, splashproof and freeze-proof	•		•					20	n/a	78.9	105.8	534g
8mm f/1.8 Pro Fisheye	£799	Web		Fisheye lens with impressive image quality that's dustproof, splashproof and freeze-proof			•					12	n/a	62	80	315g
9-18mm (Micro) f/4-5.6 ED	£630	NYT		This super wideangle lens offers an equivalent focal range of 18-36mm in 35mm terms			•					25	52	56.5	49.5	155g
12mm (Micro) f/2.0 ED	£739	1/12	5★	A wideangle fixed lens for the Micro Four Thirds system			•					20	46	56	43	130g
12-40mm f/2.8	£899	NYT		Weather-resistant wideangle zoom with a constant aperture of f/2.8			•					20	62	69.9	84	382g
12-50mm (Micro) f/3.5-6.3 ED EZ	£349	NYT		A reasonably-priced MFT zoom lens			•					20	52	57	83	211g
17mm M.Zuiko f/1.8 MSC	£450	7/13	5★	Wide-aperture, wide-angle prime boasting excellent peak sharpness and no colour fringing			•					25	46	57	35	120g
17mm (Micro) f/2.8 Pancake	£300	5/10	4★	Results are impressive across the most-used apertures given the wide angle of view offered			•					20	37	57	22	71g
14-42mm (Micro) f/3.5-5.6 ED	£300	5/10	4★	Generally a good performer, but control over chromatic aberrations could be a little better			•					25	40.5	62	43.5	150g
14-42mm II R (Micro) f/3.5-5.6	£269	NYT		A redesigned variation of the standard kit lens			•					25	37	56.5	50	112g
14-150mm (Micro) f/4-5.6 ED	£630	NYT		Plenty of focal range is offered by this MFT lens			•					50	58	63.5	83	280g
14-150mm II f/4-5.6	£550	NYT		High-powered zoom for all your needs – from wideangle to telephoto – plus weather-resistance			•					50	58	63.5	83	285g
25mm f/1.8	£370	NYT		Compact prime lens with ultra-bright f/1.8 aperture	•		•					25	46	57.8	42	137g
40-150mm f/2.8 ED	£1299	03/15	4★	This powerful 80-300mm 35mm equivalent focal length lens offers amazing portability for this pro class			•					70	72	79.4	160	760g
40-150mm R (Micro) f/4-5.6	£309	NYT		This middle-distance zom lens has an 80-300mm 35mm equivalent focal length			•					90	58	63.5	83	190g
45mm (Micro) f/1.8	£279	2/12	5★	Fast-aperture lens for taking portrait shots proved to be sharp, quiet and without colour fringing			•					50	37	56	46	116g
60mm f/2.8 Macro	£450	NYT		High-precision macro lens that's dustproof and splashproof			•					19	46	56	82	185g
75-300mm II (Micro) f/4.8-6.7	£499	NYT		Update featuring Zuiko Extra-low Reflection Optical coating said to reduce ghosting			•					90	58	69	117	423g
75mm f/1.8 ED	£799	8/13	5★	Ultra-fast prime lens ideal for portraits and action shots			•					84	58	64	69	305g

PANASONIC CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	MOUNT						Min Focus (cm)	Filter Thread (mm)	DIMENSIONS		
						Canon M	Micro 4 Thirds	Samsung NX	Sony E	Pentax Q	Nikon 1			Width (mm)	Length (mm)	Weight
G 7-14mm f/4	£1300	5/10	5★	For a wideangle zoom, the overall level of resolution is very impressive			•					25	-	70	83.1	300g
G 8mm Fisheye f/3.5	£730	NYT		The world's lightest and smallest fisheye lens for an interchangeable lens camera			•					10	22	60.7	51.7	165g
G 12mm 3D Lens f/12	£320	NYT		Allows compatible cameras to shoot 3D images			•					60	-	57	81.8	45g
G 12-32mm f/3.5-5.6 MEGA OIS	£270	NYT		Very compact with a versatile zoom range and 3 aspherical lenses	•		•					20	37	55.5	24	70g
G X 12-35mm f/2.8 X PZ POWER OIS	£1095	10/12	5★	Fast, high-quality standard zoom for Micro Four Thirds cameras	•		•					25	58	67.6	73.8	305g
G 14mm f/2.5	£249	NYT		Wideangle pancake lens which should suit landscape photographers			•					18	46	55.5	20.5	55g
G 14-42mm II f/3.5-5.6 MEGA OIS	£375	NYT		Addition of two aspherical elements helps make this lens smaller than previous version	•		•					20	46	56	49	110g
G X 14-42mm f/3.5-5.6 X PZ POWER OIS	£369	2/13	4★	Powered zoom; impressive results in terms of both sharpness and chromatic aberration	•		•					20	37	61	26.8	95g
G 14-45mm f/3.5-5.6 MEGA OIS	£189	NYT		A lightweight and compact standard zoom featuring MEGA O.I.S. optical image stabilisation	•		•					30	52	60	60	195g
G 14-140mm f/3.5-5.6 POWER OIS	£599	NYT		Metal-bodied zoom featuring company's POWER O.I.S. optical image stabiliser	•		•					30	58	67	75	265g
DG 15mm f/1.7 Leica DG SUMMILUX	£549	NYT		High-speed prime with a compact metal body and includes 3 aspherical lenses to cut down distortion			•					20	46	36	57.5	115g
G 20mm f/1.7	£300	NYT		High-speed prime (40mm is the 35mm camera equivalent) with 2 aspherical lenses			•					20	46	63	25.5	100g
DG 25mm f/1.4 DG SUMMILUX	£550	2/12	5★	A fast-aperture fixed focal length standard lens from Leica			•					30	46	63	54.5	200g
G 30mm f/2.8 Macro MEGA OIS	£300	07/15	3★	Compact lens offering true-to-life magnification capability for better macro images	•		•					10	46	58.8	63.5	180g
35-100mm E f/4-5.6 MEGA OIS	£300	NYT		Telephoto zoom equivalent to 70-200mm on a 35mm camera	•		•					90	46	55.5	50	135g
G X 35-100mm f/2.8 POWER OIS	£1099	NYT		Telephoto zoom with Nano Surface Coating technology for dramatic reduction of ghosting and flare	•		•					85	58	67.4	100	360g
42.5mm f/1.2 Leica DG POWER OIS	£1399	Web	5★	Mid-telephoto high-speed LEICA DG NOCTICRON lens with 2 aspherical lenses and ultra-wide aperture	•		•					50	67	74	76.8	425g
G 42.5mm f/1.7 POWER OIS	£349	NYT		Mid-telephoto lens with a 35mm equivalent of 85mm, its f/1.7 aperture promises a beautiful bokeh effect			•					37	31	55	50	130g
G 45-150mm f/4-5.6 MEGA OIS	£280	2/13	4★	Compact, lightweight telephoto zoom comprising 12 elements in 9 groups	•		•					90	52	62	73	200g
G X 45-175mm f/4-5.6 X PZ POWER OIS	£400	7/12	4★	A powered long focal length zoom lens	•		•					90	46	61.6	90	210g
G 45-200mm f/4-5.6 MEGA OIS	£330	7/12	4★	Superzoom lens with three ED elements and Mega O.I.S. technology	•		•					100	52	70	100	380g
G 100-300mm f/4-5.6 MEGA OIS	£550	7/11	4★	Long zoom lens offering optical image stabilization	•		•					100	52	70	100	380g



## PENTAX CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Mount	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
<b>3.8mm-5.9mm (Q System) f/3.7-4</b>	£429	NYT		Super-compact, ultra-lightweight wide zoom, equivalent to 17.5-27mm in the 35mm format	•	Canon M	25	49	38	54	75g
<b>8.5mm (Q System) f/1.9 AL [IF]</b>	£149	NYT		Standard prime lens in the Q system	•	Micro 4 Thirds	20	40.5	45.5	23	37g
<b>6.3mm (Q System) f/7.1</b>	£129	NYT		A wide lens for the Q system	•	Samsung NX		N/A	40.6	25	21g
<b>11.5mm (Q System) f/9</b>	£49	NYT		Extremely thin Mount Shield Lens equivalent to 53mm in the 35mm format, offering a distinctive, velvety image	•	Sony E	30	N/A	6.9	40.8	8g
<b>18mm (Q System) f/8</b>	£129	NYT		A telephoto lens for the Q system	•	Pentax Q		N/A	40.6	19.5	18g
<b>3.2mm (Q System) f/5.6</b>	£149	NYT		A fisheye lens for the Q system	•	Nikon 1	90	N/A	40.6	30.5	29g
<b>5-15mm (Q System) f/2.8</b>	£279	NYT		A short zoom lens for the Q system	•	Fujifilm Mount		40.5	45.5	23	37g
<b>5-15mm (Q System) f/2.8-4.5</b>	£299	NYT		A standard zoom lens for the Q system equivalent to 27.5-83mm in the 35mm format	•	Full frame only	30	40.5	48.5	48	96g
<b>15-45mm (Q System) f/2.8</b>	£279	NYT		A telephoto zoom lens for the Q system that's super-compact and ultra-lightweight	•		100	40.5	56	50	90g

## SAMSUNG CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Mount	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
<b>9mm f/3.5 ED</b>	£149	NYT		At 12.5mm thin, this pancake lens is constructed of solid metal, made for the NX Mini only	•	Canon M	11	N/A	50	12.5	31g
<b>9-27mm f/3.5-5.6 ED OIS</b>	£199	NYT		Versatile and compact zoom lens – NX-M mount for NX Mini only	•	Micro 4 Thirds	14	40.5	50	29.5	73g
<b>10mm f/3.5 Fisheye</b>	£399	NYT		Lightweight and compact, this versatile fisheye lens can be used with a wide range of Smart NX cameras	•	Samsung NX	9	N/A	58.8	26.3	72g
<b>17mm NX-M f/1.8 OIS</b>	£160	NYT		Portrait prime lens designed with an NX-M Mount for the NX Mini	•	Sony E	18	39	50	28	55g
<b>12-24mm f/4-5.6 ED</b>	£480	NYT		Portable ultra-wideangle zoom lens with i-function	•	Pentax Q	24	58	63.5	65.5	208g
<b>16mm NX i-Function f/2.4</b>	£299	NYT		A pancake lens with a wide angle of view	•	Nikon 1	18	43	61	24	90g
<b>16-50mm f/2-2.8 Premium S ED OIS</b>	£999	NYT		Bright-aperture zoom lens made of metal, with quiet AF performance whether shooting stills or video	•	Fujifilm Mount	30	72	81	96.5	622g
<b>16-50mm f/3.5-5.6 Power Zoom</b>	£279	NYT		Ultra-compact and lightweight design	•	Full frame only	24	43	64.8	31	111g
<b>20-50mm f/3.5-5.6 ED II</b>	£199	NYT		Ultra-compact lens with a retractable design. It's lightweight and an ideal optic for travelling	•		28	40.5	63.2	39.8	119g
<b>18-55mm NX i-Function OIS f/3.5-5.6</b>	£199	9/10	4.5★	Not an outstanding set of MTF curves but acceptable nevertheless. Weaker at 18mm	•		28	58	63	65	198g
<b>18-200mm NX i-Function OIS f/3.5-6.3</b>	£649	9/12	4.5★	A mid-range zoom lens aimed at movie making	•		50	67	72	105.5	549g
<b>20mm NX i-Function f/2.8</b>	£229	2/12	5★	Wideangle pancake lens	•		17	43	62	25	89g
<b>30mm NX i-Function f/2</b>	£249	9/10	4★	This pancake optic exhibits very impressive peak sharpness at around f/4-5.6	•		25	43	61	21	85g
<b>45mm NX i-Function f/1.8</b>	£249	NYT		Fast f/1.8 aperture produces a shallow depth of field making it ideal for portraiture	•		45	43	62	44.5	115g
<b>45mm NX i-Function f/1.8 2D/3D</b>	£399	NYT		Delivers high-end 3D capabilities with a large aperture and smooth autofocus system	•		50	43	62	44.5	122g
<b>50-150mm f/2.8 S ED OIS</b>	£1199	NYT		Premium zoom lens with advanced OIS, constant f/2.8 aperture, and dust and splash-resistant	•		70	72	81	154	915g
<b>50-200mm NX i-Function ED OIS III f/4-5.6</b>	£249	9/10	4★	Performance at the 50mm end is good, though this drops off at the tele end	•		98	52	70	100	417g
<b>60mm NX i-Function Macro ED SSA OIS f/2.8</b>	£499	2/12	5★	This prime lens with macro capability should be useful for portraiture	•		18	52	73.5	84	389g
<b>85mm NX i-Function ED SSA OIS f/1.4</b>	£849	4/12	5★	This prime lens is missing image stabilisation, but should still perform well	•		82	67	79	92	714g

## SIGMA CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Mount	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
<b>19mm f/2.8 DN   A</b>	£189	NYT		Metal-bodied high-performance wideangle prime lens	•	Canon M	20	46	60.8	45.7	150g
<b>30mm f/2.8 DN   A</b>	£189	NYT		Uses a high-quality double-sided aspherical lens for expressive performance worthy of Sigma's 'Art' line	•	Micro 4 Thirds	30	46	60.8	40.5	140g
<b>60mm f/2.8 DN   A</b>	£189	NYT		Latest addition to Sigma's 'Art' range is a mid-range, high-performance telephoto lens with metal body	•	Samsung NX	50	46	60.8	55.5	190g

## SONY CSC

LENS	RRP	TESTED	SCORE	SUMMARY	Image Stabilisation	Mount	Min Focus (cm)	Filter Thread (mm)	Width (mm)	Length (mm)	Weight
<b>10-18mm f/4</b>	£750	8/13	4★	Super wideangle zoom with Super ED glass and Optical SteadyShot image stabilisation	•	Canon M	25	62	70	63.5	225g
<b>16mm f/2.8</b>	£220	2/12	4★	Pancake lens for NEX system, with a circular aperture and Direct Manual Focus	•	Micro 4 Thirds	24	49	62	22.5	67g
<b>16-35mm f/4 ZA OSS Vario-Tessar T* FE</b>	£1289	1/15	5★	Zeiss full-frame wideangle zoom lens	•	Samsung NX	28	72	78	98.5	518g
<b>16-50mm f/3.5-5.6 OSS</b>	£299	NYT		Compact lens with Power Zoom, ED glass and Optical SteadyShot image stabilisation	•	Sony E	25	40.5	64.7	29.9	116g
<b>16-70mm f/4 ZA OSS Vario-Tessar T*</b>	£839	NYT		A lightweight, versatile mid-range zoom with a constant f/4 aperture	•	Pentax Q	35	55	66.6	75	308g
<b>18-55mm f/3.5-5.6 OSS</b>	£270	NYT		Optical SteadyShot, said to be silent during movie capture, and a circular aperture	•	Nikon 1	25	49	62	60	194g
<b>18-105mm f/4 G OSS</b>	£499	NYT		Sony G lens for E-mount cameras with a constant f/4 aperture	•	Fujifilm Mount	45	72	78	110	427g
<b>18-200mm f/3.5-6.3 OSS LE</b>	£489	NYT		Smaller and lighter than comparable lenses, this is an ideal high-magnification travel lens	•	Full frame only	50	62	68	98	440g
<b>18-200mm PZ f/3.5-6.3 OSS</b>	£999	NYT		Boasts powered zoom and image stabilisation with Active Mode, making it ideal for movies	•		30	67	93.2	99	649g
<b>20mm f/2.8</b>	£309	NYT		Pancake wideangle lens promises to be the perfect walkaround partner for E mount cameras	•		20	49	62.6	20.4	69g
<b>24mm f/1.8 ZA Sonnar T*</b>	£839	NYT		Top quality Carl Zeiss optic ideally suited to the NEX-7	•		16	49	63	65.6	225g
<b>24-240mm f/3.5-6.3 OSS</b>	£929	NYT		Ideal for travel, landscapes and more, with built-in stabilisation and also dust and moisture resistant	•		50	72	80.5	118.5	780g
<b>24-70mm f/4 ZA OSS Vario-Tessar T*</b>	£1049	NYT		Compact lens with an f/4 maximum aperture across the zoom range and built-in image stabilisation	•		40	67	73	94.5	426g
<b>28mm f/2</b>	£419	NYT		This full-frame wideangle prime with a bright f/2.0 maximum aperture promises excellent sharpness	•		29	49	64	60	200g
<b>28-70mm f/3.5-5.6 OSS</b>	£449	NYT		Built-in Optical SteadyShot image stabilisation, lightweight, and a popular zoom range	•		30	55	72.5	83	295g
<b>28-135mm PZ f/4 G OSS</b>	£2379	NYT		High performance G Series standard zoom lens, constant f/4 aperture, built for high quality moviemaking	•		95	95	162.5	105	1215g
<b>30mm f/3.5 Macro</b>	£219	NYT		A macro lens for the NEX Compact System Cameras	•		9	49	62	55.5	138g
<b>35mm f/1.4 ZA Distagon T*</b>	£1559	NYT		Full-frame ZEISS Distagon lens with large, bright f/1.4 aperture	•		30	72	73	94.5	630g
<b>35mm f/1.8</b>	£399	NYT		Lightweight versatile prime with Optical SteadyShot image stabilisation	•		30	49	62.2	45	155g
<b>35mm f/2.8 ZA Sonnar T*</b>	£699	NYT		When coupled with a full-frame Sony E-mount camera, this prime lens promises to deliver	•		35	49	61.5	36.5	120g
<b>50mm f/1.8</b>	£219	NYT		A handy, low price portrait lens for the NEX range	•		39	49	62	62	202g
<b>55mm f/1.8 ZA Sonnar T*</b>	£849	NYT		35mm full-frame prime lens with wide aperture allowing good images indoors or in low light	•		50	49	64.4	70.5	281g
<b>55-210mm f/4.5-6.3 OSS</b>	£289	NYT		Lightweight telephoto zoom lens for the NEX range	•		100	49	63.8	108	345g
<b>70-200mm f/4 G OSS</b>	£1359	10/14	4★	G Series telephoto zoom lens, dust and water resistant, with built-in image stabilisation	•		100	72	80	175	840g
<b>90mm f/2.8 Macro G OSS FE</b>	£1049	09/15	4★	The first dedicated macro lens for Sony's full-frame E-mount cameras	•		28	62	79	130.5	602g







Visit our website - updated daily  
**www.parkcameras.com/wdc**  
 or e-mail us for sales advice using  
**sales@parkcameras.com**

Call one of our knowledgeable sales advisors  
**Monday - Saturday (9:00am - 5:30pm) or Sunday (11:00am - 4:30pm)**  
**01444 23 70 65**



• UK's largest independent photo store • Award winning customer service • Family owned & Run

**OLYMPUS pen-F**

20.3 MEGA PIXELS 10 FPS 3.0" IS HD

**NEW** Expected late Feb!

Pre-order to receive one of the first in the UK!

**X-Pro2**

24.3 MEGA PIXELS 8 FPS 3.0" IS HD

See our website to watch our unboxing video!

**NEW** & coming soon!

Pre-order and receive a limited edition, handmade X-PRO2 leather strap made by British brand Globe Trotter! Pre-order early as there are a limited number of straps available! Ends 14.02.16

**Olympus OM-D E-M10 II + 14-42mm II**

16.0 MEGA PIXELS 8.5 FPS 3.0" IS HD

**IN STOCK AT £649**

Add an Olympus BLS-50 spare battery for only £49.99

**Olympus OM-D E-M5 II Body Only**

16.1 MEGA PIXELS 10 FPS 3.0" IS HD

**IN STOCK FROM £769**

Add a HLD-8 Power Battery Holder for only £194.00

**Fujifilm X70**

16.3 MEGA PIXELS 18.5mm f/2.8 11 FPS

**NEW & COMING SOON!**

See web for details

Pre-order & receive a **FREE PREMIUM LEATHER CASE!**

**Fujifilm X-E2**

16.3 MEGA PIXELS 7 FPS

**NEW & COMING SOON!**

See web for details

Pre-order & receive a **FREE PREMIUM LEATHER CASE!**

**Fujifilm XF 100-400mm f/4.5-5.6 R LM OIS WR**

**NEW!**

See web for details

See our website for details on this lens with a 1.4x extender!

**Olympus E-M10**

16.1 MEGA PIXELS 8 FPS

Body only **£349.00** Twin lens kit **£499.00**

**TEST & WOW!** Test Drive this camera for free with Park Cameras

**Olympus E-M1**

16.3 MEGA PIXELS

Our price **£849.00** + 12-50mm **£989.00**

**TEST & WOW!** Test Drive this camera for free with Park Cameras

**Olympus 300mm f/4.0 IS PRO**

**NEW!**

**NEW & COMING SOON!**

See web for details

12 months interest free finance available! Call 01444 23 70 60.

**Pentax K-50**

16.2 MEGA PIXELS

Our price **£339.00** + 18-55mm **£375.00**

Add a Pentax D-L109 spare battery for only £59

**Pentax K-3 II**

24.3 MEGA PIXELS

Our price **£699.00** + 18-135mm **£979.00**

**FREE** 50mm f/1.8 lens with the Pentax K-3 II! Ends 29.02.16

**Pentax 645z**

51.4 MEGA PIXELS

Body Only **£5,999.00** + 24-85 VR **£1,499.00**

**FREE** 55mm lens when you buy a 645z body! Ends 29.02.16

**LUMIX TZ100**

20.1 MEGA PIXELS 30x 3.0" PHOTO

Explore freedom capturing every moment with a camera that moves as you do.

**NEW** Expected March!

Pre-order to receive one of the first in the UK!

**Leica T (typ 701)**

16.5 MEGA PIXELS 4K

Our price **£1,099.00**

Available in silver or black

Personalise your Leica T with a snap on front cover! See website

**Leica D-LUX (typ 109)**

16.8 MEGA PIXELS 4x

In stock at **£779.00**

See website for details

Also available in solid gray for £825. See in store or online.

**Leica M 240**

24 MEGA PIXELS HD

Visit us in store or online for our latest price

Add a Leica BP-SCL2 spare battery for only £110.

**Panasonic LUMIX G7**

16.0 MEGA PIXELS PHOTO

Our price **£499.00** + 18-55mm **£569.00**

Add a Nikon EN-EL14a spare battery for only £40.00

**Panasonic FZ330**

24x PHOTO

Our price **£749.00** + 18-105mm **£888.00**

Add a Nikon MB-D15 battery grip for only £229.00

**Panasonic 100-400mm LEICA f/4.0-6.3**

**NEW!**

**NEW & COMING SOON!**

See web for details

Learn more about this new lens by visiting [parkcameras.com](http://parkcameras.com)

**Leica V-LUX (typ 114)**

20.1 MEGA PIXELS 4K

In stock at **£779.00**

See website for details

Add a Leica BP-DCL2 spare battery for only £70.

**Leica X-U (typ 113)**

16.2 MEGA PIXELS

**NEW & NOW INSTOCK!!**

See web for details

Learn more about this new camera at our website

**FOR THE LEICA RANGE OF LENSES AND NEW FILTERS, SEE IN STORE OR VISIT OUR WEBSITE**

## SIGMA

**Sigma 50mm f/1.8 DC HSM (Art)**

In stock at **£579.00**

See website for details

Add a Sigma 77mm DG MC UV filter for only £19.99

**Sigma 10-20mm f/3.5 EX DC HSM**

In stock at **£339.99**

See website for details

Add a Sigma 82mm WR UV filter for only £69.99

**Sigma 150-600mm f/5-6.3 DG OS HSM | Contemporary**

In stock at **£739.00**

See website for details

Add a Sigma 95mm protector filter for only £69.99

4.5mm f/2.8 Fisheye EX DC **£599.00**  
 8mm f/3.5 Cinc. Fish EX DG **£599.00**  
 15mm f/2.8 Diag. Freye EX DG **£499.00**  
 19mm f/2.8 DN **£119.00**  
 20mm f/1.4 DG HSM **£629.00**  
 24mm f/1.4 DG HSM **£599.00**  
 30mm f/1.4 DG HSM Canon **£299.00**  
 30mm f/2.8 DN **£119.00**  
 35mm f/1.4 DG HSM **£599.00**  
 50mm f/1.4 DG HSM (Art) **£579.00**  
 60mm f/2.8 DN **£119.00**  
 85mm f/1.4 EX DG HSM **£619.00**  
 105mm f/2.8 EX DG OS HSM **£329.00**  
 150mm f/2.8 EX DG Macro **£619.00**  
 180mm f/2.8 EX DG OS HSM **£1,099.00**

300mm f/2.8 APO EX DG **£2,199.00**  
 500mm f/4.5 APO EX DG **£3,599.00**  
 800mm f/5.6 APO EX DG HSM **£4,299.00**  
 8-16mm f/4.5-5.6 DC HSM **£499.00**  
 10-20mm f/4.5-5.6 EX DC **£279.00**  
 12-24mm f/4.5-5.6 II DG HSM **£529.00**  
 17-50mm f/2.8 DC OS HSM **£279.00**  
 17-70mm f/2.8-4 DC OS **£319.00**  
 18-35mm f/1.8 DC HSM **£549.00**  
 18-200mm f/3.5-6.3 DC OS HSM **£249.00**  
 18-250mm DC Macro OS HSM **£279.00**  
 18-250mm DC Macro OS HSM **£269.99**  
 18-300mm f/3.5-6.3 DC Macro **£349.00**  
 24-35mm f/2.8 DG HSM Art **£699.00**  
 24-70mm f/2.8 IF EX DG **£549.00**

24-70mm f/2.8 IF EX DG **£549.00**  
 24-105mm f/4 DG OS HSM **£599.00**  
 50-500mm f/4.5-6.3 OS HSM **£659.99**  
 70-200mm f/2.8 OS **£729.00**  
 70-300mm f/4.0-5.6 APO Macro **£149.00**  
 120-300mm f/2.8 DG OS HSM **£2,499.00**  
 150-500mm f/5.0-6.3 DG OS **£494.99**  
 150-600mm f/5-6.3 DG | S **£1,199.00**  
 200-500mm f/2.8 EX DG **£12,999.00**  
 300-800mm f/5.6 EX DG HSM **£5,499.00**  
 EX DG 1.4x APO - Canon **£179.00**  
 EX DG 1.4x APO **£179.00**  
 EX DG 2x APO DG **£199.00**  
 USB Dock **£39.99**

## TAMRON

**Tamron 35mm f/1.8 Di VC USD**

In stock at **£469.99**

See website for details

Add a Hoya 67mm REVO SMC UV(C) HMC filter for only £10!

**Tamron 16-300mm f/3.5-6.3 Di II VC PZD**

In stock at **£385.00**

See website for details

Add a Hoya 67mm UV(C) HMC filter for only £18!

**Tamron 70-300mm f/4-5.6 Di LD Macro**

In stock at **£89.99**

See website for details

Add a Hoya 62mm UV(C) HMC filter for only £17.99

**Tamrac Jazz zoom 20**

Toploader bag

Only **£6.00**

**Tamrac Explorer 41**

Shoulder bag

Only **£32.49**

**Tamrac Anvil Slim 11**

Backpack

Only **£189.99**

See the new Manfrotto Street Collection in store or online at [www.parkcameras.com](http://www.parkcameras.com)

Visit our website for full details on all the Sigma lenses, as well as special deals on filters!

**FOR PRE-LOVED CAMERAS, LENSES & MORE AT LOW PRICES, VISIT [WWW.PARKCAMERAS.COM/USED](http://WWW.PARKCAMERAS.COM/USED)**

For a whole range of tips and tricks and news all the latest new products, visit [blog.parkcameras.com](http://blog.parkcameras.com)





**THE WEX PROMISE:** Over 16,000 Products | Free Delivery on £50 or over | 30-Day Returns Policy†

**Canon Lenses**

EF 24mm f1.4L II USM.....	£1099
EF-S 24mm f2.8.....	£127
EF 40mm f2.8 STM.....	£118.97
EF-S 60mm f2.8 USM Macro.....	£305
EF 85mm f1.8 USM.....	£237
EF 100mm f2.8 L IS USM Macro.....	£619
EF-S 10-22mm f3.5-4.5 USM.....	£377
EF 11-24mm f4 L USM.....	£2799
EF 16-35mm f2.8 L USM MkII.....	£1060
EF-S 17-55mm f2.8 IS USM.....	£519
EF-S 18-135mm f3.5-5.6 IS STM.....	£295
EF 24-70mm f2.8L II USM.....	£1400
EF-S 55-250mm f4.5-5.6 IS II.....	£208
EF-S 10-18mm f4.5-5.6 IS STM.....	£179
EF-S 100-400mm f4.5-5.6 L IS II USM.....	£1799
EF 70-200mm f2.8 L IS II USM.....	£1499
EF 70-200mm f4 L USM.....	£439
EF 70-300mm f4.5-5.6 DO IS USM.....	£1089
EF 70-300mm f4.5-6 L IS USM.....	£876
EF 24-105mm f4 L IS USM.....	£638
EF 28-300mm f3.5-5.6 L IS USM.....	£1795
EF 135mm f2 L USM.....	£679

 For Canon-fit Tamron,  
 Sigma or Samyang lenses,  
 visit our website

**Canon** PRO

EOS 760D

 24.7  
megapixels  
5.0 fps  
1080p  
movie mode

**760D** From **£549**  
 760D Body £549  
 750D Body £459

**Canon** PRO

EOS 70D

 20.2  
megapixels  
7.0 fps  
1080p  
movie mode

**70D** From **£697**  
 70D Body £697  
 70D + 18-55mm IS STM £722

**Canon** PRO

EOS 6D

 20.2  
megapixels  
4.5 fps  
1080p  
movie mode  
Full frame  
CMOS sensor

**6D** **£1119**  
 6D Body £1119

**Canon** PRO

EOS 7D Mark II

 20.2  
megapixels  
10.0 fps  
1080p  
movie mode

**7D Mk II** **£1179**  
 7D Mark II Body £1179

**Canon** PRO

EOS 5D Mark III

 22.3  
megapixels  
6.0 fps  
Full Frame  
CMOS sensor

**5D Mk III** **£2178**  
 5D Mk III Body £2178

**Canon** PRO

EOS 5DS

 50.6  
megapixels  
5.0 fps  
Full Frame  
CMOS sensor

**5DS** From **£2699**  
 NEW 5DS Body £2699  
 NEW 5DS R Body £3199

 Black or Red  
**Nikon** YEAR WARRANTY

 D5500  
 24.2  
megapixels  
5.0 fps  
1080p  
movie mode

**D5500** From **£499**  
 D5500 Body £499  
 D5500 + 18-55mm £569  
 D5500 + 18-140mm £749

**Nikon** YEAR WARRANTY

 D500  
 20.9  
megapixels  
10.0 fps  
1080p  
movie mode

**D500** From **£1729**  
 NEW D500 Body £1729

**Nikon** YEAR WARRANTY

 D7200  
 24.2  
megapixels  
6.0 fps  
1080p  
movie mode

**D7200** From **£751**  
 D7200 Body £751  
 D7200 + 18-105mm £888

**Nikon** YEAR WARRANTY

 D610  
 24.3  
megapixels  
6.0 fps  
1080p  
movie mode

**D610** From **£999**  
 D610 Body £999  
 D610 + 24-85mm £1499

**Nikon** YEAR WARRANTY

 D750  
 24.3  
megapixels  
6.5 fps  
Full Frame  
CMOS sensor

**D750** From **£1396**  
 D750 Body £1396  
 D750 + 24-85mm VR £1716  
 D750 + 24-120mm VR £1948

**Nikon** YEAR WARRANTY

 D810  
 36.3  
megapixels  
7.0 fps  
Full Frame  
CMOS sensor

**D810** From **£2349**  
 D810 Body £2349  
 D810A Body £2699

**Nikon** YEAR WARRANTY

 D5  
 20.8  
megapixels  
12.0 fps  
Full Frame  
CMOS sensor

**D5** **£5199**  
 NEW D5 Body £5199

**Nikon Lenses**

40mm f2.8 G AF-S DX Micro.....	£185
105mm f2.8 G AF-S VR IF ED Micro.....	£659
10-24mm f3.5-4.5 G AF-S DX.....	£639
18-200mm f3.5-5.6 G ED AF-S DX VR II.....	£549
28-300mm f3.5-5.6 G AF-S ED VR.....	£649
70-300mm f4.5-5.6 G AF-S VR IF-ED.....	£429
50mm f1.8 AF-S.....	£179
35mm f1.8 G AF-S DX.....	£151
50mm f1.4 G AF-S.....	£275
55-200mm f4.5-5.6 G ED VR II DX.....	£254
55-300mm f4.5-5.6 G AF-S DX VR.....	£269
18-300mm f3.5-6.3 G ED VR AF-S DX.....	£499
85mm f1.8 G AF-S.....	£339
16-80mm f2.8-4 G AF-S VR ED DX.....	£869
24-70mm f2.8 G AF-S ED DX.....	£1199

 For 2-year warranty on any camera and lens kit simply register your new Nikon within 30 days of purchase.  
 Offer applies to UK & Republic of Ireland stock only. Call 0800 597 8472 or visit [www.nikon.co.uk/register](http://www.nikon.co.uk/register)

 CUSTOMER REVIEW: D4s Body  
 ★★★★★ "Spectacular Camera"  
 Charlie Delta - Hertfordshire

**OLYMPUS**

 OM-D E-M1  
 16.3  
megapixels  
8.5 fps

**OM-D E-M1** From **£849**  
 OM-D E-M1 Body £849  
 OM-D E-M1 + 12-40mm £1359  
 OM-D E-M5 II Body £769  
 OM-D E-M5 II + 12-50mm £970

**OLYMPUS**

 OM-D E-M10 II  
 16.1  
megapixels  
8.5 fps

**OM-D E-M10 II** From **£549**  
 OM-D E-M10 II Body £549  
 OM-D E-M10 II + 14-42mm £649

**FUJIFILM**

 X-Pro2 black  
 24.3  
megapixels  
8 fps

**X-Pro2** Body **£1349**  
 NEW X-Pro2 Body £1349  
 NEW X-E2S Body £549  
 NEW X-E2S + 18-55mm £749  
 X-T10 Body £449  
 X-T1 from £805  
 X-E2 Body £429

**SONY**

 A7R Mark II  
 42.0  
megapixels  
5.0 fps  
4K Video

**NEW A7R Mk II** From **£2599**  
 A7R Mk II Body £2599  
 NEW A7S II Body £2499  
 A7 II £1189  
 A7 £799  
 A7 + 28-70mm £975  
 A7S Body £1599  
 A7R Body £899

**SONY**

 A6000  
 24.3  
megapixels  
11.0 fps  
1080p  
movie mode

**A6000** From **£439**  
 A6000 Body £439  
 A6000 + 16-50mm £489  
 A6000 + 16-70mm £1099  
 A6000 + 16-50mm + 55-210mm £699

**Panasonic**

 GX8  
 20.03  
megapixels  
8.0 fps  
4K Video

**GX8** From **£779**  
 GX8 Body £779  
 GX8 + 14-140mm £1129  
 GX8 + 12-35mm £1399

<b>RECOMMENDED LENSES:</b>	
Panasonic 12-35mm f2.8.....	£699
Panasonic 45-175mm f4.0-5.6.....	£279
Panasonic 25mm f1.7.....	£159
Panasonic 45mm f1.5.....	£169
Panasonic 35-100mm f2.8.....	£799



"Love Wex. You can always be reassured you're going to get great service and a great item at the best price. Thanks!"

S. Pradham - Essex

CALL CENTRE NOW OPEN SUNDAYS

01603 208461

Mon-Fri 8am-7pm, Sat 9am-6pm, Sun 10am-4pm

visit [www.wex.co.uk](http://www.wex.co.uk)

THE WEX PROMISE: Part-Exchange Available | Used items come with a 12-month warranty<sup>††</sup>

#### Digital Compact Cameras

Digital compact batteries, cases and accessories are available to buy on our website



PowerShot G5 X  
£579



PowerShot G7 X  
£372



PowerShot G9 X  
£379

IXUS 275	£104
IXUS 285 HS	£169
IXUS 160	£64
IXUS 180	£129
PowerShot SX710	£195
PowerShot SX610	£128
PowerShot SX530	£209
PowerShot G1 X MK II	£464
PowerShot SX60 HS	£299
PowerShot SX540	£299



Coolpix S9900 Black  
£209



Coolpix P900  
£499



Coolpix AW130 Blue, Camouflage, Yellow, Orange, or Black £198

Coolpix S7000	£129
Coolpix L840	£139
Coolpix S3700	£79
Coolpix L31	£49



Stylus TG-4  
£279

SP-100EE	£225
Stylus SH-2	£199
Stylus 1s	£329



FinePix X100T £796

FinePix S9800	£169
FinePix XP90 Blue	£179
FinePix XP80	£119
XQ2	£219
NEW X70	£549



Cyber-Shot HX90V  
£309

Cyber-Shot HX60	£178
Cyber-shot WX500	£243
Cyber-Shot RX100 III	£569
Cyber-Shot RX100 IV	£759
Cyber-Shot RX10 II	£1049
Cyber-Shot RX1R II	£2599
Cyber-Shot RX100 II	£329
Cyber-Shot RX100	£264



Lumix LX100  
£519

Lumix FZ72	£196
Lumix TZ60	£219
Lumix FZ1000	£589
Lumix TZ70	£308
Lumix FZ330	£449
Lumix CM1	£639
Lumix TZ100	£549
Lumix TZ80	£359

#### Reasons to buy from Wex Photographic

- live chat
- product reviews
- news & guides on our blog
- 16,000+ products

[www.wex.co.uk](http://www.wex.co.uk)

#### Wex Photographic Showroom

UK's largest Independent Photographic Showroom



Monday	10am-6pm
Tuesday	10am-5pm
Wednesday-Saturday	10am-6pm
Sunday	10am-4pm

Freemantle Estate, Drayton High Road, Norwich NR6 5DP



#### RICOH

GR II Digital	£479
GR	
XG-1	£189
WG-30	£169

#### Memory Cards



Extreme Pro: 95MB/s SDHC	
16GB	£24
32GB	£34
64GB SDXC	£59
SanDisk Extreme Pro: 160MB/s UDMA CompactFlash	
16GB	£44
32GB	£64
64GB	£99
128GB	£189
SanDisk Class 10 Extreme Micro SD Card plus adapters:	
16GB	£24
32GB	£30
SanDisk USB 3.0 ImageMate Reader	£29.95



Lexar XQD™ Memory Card:	
168MB/s	
32GB	£149
64GB	£269
128GB	£419
256GB	£699
512GB	£1199
1TB	£1999
Lexar XQD™ USB 3.0 Reader:	
High-speed transfer of RAW and HD files from your XQD memory card to your computer	£49

Professional 1066x Compact Flash: 160MB/s	
16GB	£44
32GB	£74
64GB	£149
128GB	£219
256GB	£399
512GB	£699
1TB	£1199
2TB	£1999
4TB	£3999
8TB	£7999
16TB	£15999
32TB	£31999
64TB	£63999
128TB	£127999

#### Canon

Pixma Pro 100S	
Pixma Pro 100S	£375
Pixma Pro 100S	£529
Pixma Pro 1	£629

#### Photo Bags & Rucksacks



Whistler BP 350 AW  
£257



Photo Sport BP: 200 AW  
£118



Anvil Slim Professional Backpack  
£189.99



Manfrotto Pro Light 3N1 Backpack  
£119



Hadley Pro Original Canvas Khaki/Tan  
£109



F-803 RuggedWear  
£149

#### Tripods & Heads



MT190XPRO3  
£139



MT190XPRO4  
£249



327RC2 Joystick Head  
£135



Gitzo GT2541EX  
£519



Joby Gorillapod  
£17



Trade in, trade up  
£13

#### Lighting & Accessories



430EX II  
£189



SB5000  
£499



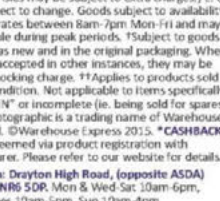
LED Lights  
From £29.99



Ezybox Speed-Lite Softbox  
£44.99



L308s Plus III Set  
£139



Light Stands  
From £10.99

Terms and Conditions All prices incl. VAT at 20%. Prices correct at time of going to press. FREE Delivery<sup>††</sup> available on orders over £50 (based on a 4 day delivery service). For orders under £50 the charge is £2.99<sup>††</sup> (based on a 4 day delivery service). For Next Working Day Delivery our charges are £4.99<sup>††</sup>. Saturday deliveries are charged at a rate of £8.95<sup>††</sup>. Sunday deliveries are charged at a rate of £13<sup>††</sup>. (<sup>††</sup> Deliveries of very heavy items, N.I., remote areas of Scotland & Ch. Isles may be subject to extra charges.) E & O.E. Prices subject to change. Goods subject to availability. Live Chat operates between 8am-7pm Mon-Fri and may not be available during peak periods. <sup>†</sup>Subject to goods being returned as new and in the original packaging. Where returns are accepted in other instances, they may be subject to a restocking charge. <sup>††</sup>Applies to products sold in full working condition. Not applicable to items specifically described as "IN" or incomplete (ie. being sold for spares only). Wex Photographic is a trading name of Warehouse Express Limited. ©Warehouse Express 2015. \*CASHBACKS Are redeemed via product registration with the manufacturer. Please refer to our website for details. Showroom: Drayton High Road, (opposite ASDA) Norwich, NR6 5DP. Mon & Wed-Sat 10am-6pm, Tues 10am-5pm, Sun 10am-4pm



# Grays of Westminster®

Exclusively... **Nikon**

**Nikon:** THE GOLD STANDARD



[www.graysofwestminster.co.uk](http://www.graysofwestminster.co.uk)

Follow us on [twitter](#): @NikonatGrays

40 Churton Street, London SW1V 2LP, England • Tel: 020-7828 4925 • Fax: 020-7976 5783 • [info@graysofwestminster.co.uk](mailto:info@graysofwestminster.co.uk)





**ODYSSEY ROLLER BAGS  
FROM £179**



**HIKER SHOULDER BAGS  
& BACKPACKS FROM £49**



**TRAVELLER SERIES  
TRIPODS FROM £99**

Visit our  
website for  
new products!

[www.nest-style.com](http://www.nest-style.com) | 01200 444007 | [info@nest-style.com](mailto:info@nest-style.com)

Nest UK is owned and operated by UK Optics Ltd. E&OE prices and offers correct at time of going to press. FREE UK shipping for orders over £50.

**Bob Rigby**  
PHOTOGRAPHIC

07775 845854  
[info@bobrigby.com](mailto:info@bobrigby.com)  
Mon to Fri : 9.30am - 5.00pm

**Wimberley**



**WH200  
HEAD  
£520**



**PLAMP 2 £41**



**£245  
SIDEKICK**

London  
Camera  
Exchange  
will have a selection of  
Wimberley products for  
sale on Stand E51 at  
The Photography Show  
N.E.C BIRMINGHAM  
19-22 MARCH 2016



**ACRATECH**  
QUALITY PRECISION PRODUCTS

**GV2  
HEAD  
3 VARIATIONS  
AVAILABLE  
PRICES FROM  
£309**



**CAMERA  
QR PLATES  
FROM  
£32**



**LONG LENS HEAD £307  
PANORAMIC HEAD £325**

**FREE UK MAINLAND DELIVERY WITH ACRATECH & WIMBERLEY HEADS ONLY**

Full Details & Buy Online @ [bobrigby.com](http://bobrigby.com)

We are the Sole UK Importers of ACRATECH & WIMBERLEY

# WE PAY CASH for your equipment

Cameras, lenses, flashguns, binoculars, scopes and other accessories

**All makes - but not these!**

**We always offer a fair price**

**Urgently Required - Digital Including:**

**NIKON. CANON. SIGMA. TOKINA.  
TAMRON. SONY. OLYMPUS. PENTAX.  
PANASONIC. LEICA.**

**INSTANT\* CASH! CALL US NOW!**

**Single items through to large collections**

**[www.cash4cameras.co.uk](http://www.cash4cameras.co.uk)  
at STAFFORD CAMERAS**

283, Eccleshall Road, Stafford, ST16 1PE.

(\*On inspection. Before travelling any distance to see us, please ring for an appointment)

Email: [cash4cameras@ntlworld.com](mailto:cash4cameras@ntlworld.com)

Tel: **01785 601028**



# PART-EXCHANGE WELCOME

## WE PART EXCHANGE, BUY FOR CASH OR COMMISSION SALE

### FAIR PRICES OFFERED ~ QUOTED QUICKLY ~ COLLECTION CAN BE ARRANGED

For speediest response please email your equipment details to... [info@mifsuds.com](mailto:info@mifsuds.com)

<b>Canon EOS 1DX</b> Full Frame  Body only <b>£4198</b>	<b>Canon EOS 5Ds R</b> Full Frame  Body only <b>£2949</b>	<b>Canon EOS 5Ds</b> Full Frame  Body only <b>£2499</b>	<b>CANON EF-S NON FULL FRAME LENSES</b> 8-15 F4 L USM Fisheye.....£899 10-18 F4.5/5.6 IS STM.....£179 18-55 F3.5/5.6 IS STM no box.....£139 18-135 F3.5/5.6 IS STM no box.....£279 24 F2.8 STM.....£128	50 F1.2 L USM.....£994 50 F1.4 USM.....£236 50 F1.8 STM.....£96 50 F1.8 II.....£74 70-200 F2.8 IS LII USM.....£1479 70-200 F2.8 non IS L USM.....£897 70-200 F4 L IS USM.....£796 70-200 F4 L USM.....£438 70-300 F4/5.6 L IS USM.....£893 85 F1.2 USM L II.....£1349 85 F1.8 USM.....£236 100 F2.8 IS L USM macro.....£618 100 F2.8 Macro USM.....£372 100-400 F4.5/5.6 IS LII U.....£1789 200-400 F4 IS L USM.....£8499 200 F2.8 II L USM.....£568 300 F2.8 IS L USM II.....£4499 300 F4 L IS USM.....£958 400 F2.8 IS L USM II.....£7399 400 F4 DO II IS USM.....£6799 400 F5.6 L USM.....£884 500 F4 IS L II USM.....£6499 600 F4 IS L USM II.....£8894 1.4x III conv.....£299 2x III conv.....£299
<b>Canon EOS 5D MKIII</b> Full Frame Body only <b>£2198</b> Plus 24-105 f4 IS U L.....£2699 BG-E11 Grip.....£215	<b>Canon EOS 6D</b> Full Frame Body only <b>£1099</b> Plus 24-105 f3.5/5.6 IS.....£1498 BG-E13 Grip.....£129	<b>Canon EOS 7D MKII</b> APS-C Body only <b>£1177</b> BG-E16 Grip.....£198	<b>CANON EF FULL FRAME LENSES</b> 11-24 F4 L USM.....£2649 16-35 F2.8 MKII L USM.....£1059 16-35 F4 L IS USM.....£679 17-40 F4 L USM.....£498 20 F2.8 USM.....£369 24 F1.4 L II USM.....£1139 24 F2.8 IS USM.....£419 24 F3.5 L TSE MKII.....£1469 24-70 F2.8 L II USM.....£1379 24-70 F4 L IS USM.....£674 24-105 F3.5/5.6 IS STM.....£369 24-105 F4 L IS USM no box.....£699 28 F2.8 IS USM.....£388 35 F1.4 USM LII.....£1699 35 F2 IS USM.....£389 40 F2.8 STM.....£149	
<b>Canon EOS 70D</b> APS-C Body only <b>£677</b> Plus 18-55 STM.....£719 Plus 18-135 STM.....£928 BG-E14 Grip.....£125	<b>Canon EOS 760D</b> APS-C Body only <b>£539</b>	<b>Canon EOS 750D</b> APS-C Body only <b>£449</b> Plus 18-55 STM.....£528 Plus 18-135 STM.....£699		
<b>Nikon D5</b> Full Frame Body only <b>£5199</b> PRE-ORDER Due March	<b>Nikon D810</b> Full Frame Body only <b>£2189</b> MBD-12 Grip (D810/800/E).....£279	<b>Nikon D750</b> Full Frame Body only <b>£1389</b> Plus 24-120 f4 VR.....£1938 MBD-16 Grip.....£228	<b>NIKON DX NON FULL FRAME LENSES</b> 10.5 F2.8 DX Fisheye.....£548 10-24 F3.5/4.5 AFS G.....£638 16-80 F2.8/4 AFS ED VR.....£766 16-85 F3.5/5.6 AFS VR.....£389 18-55 F3.5/5.6 AFS VR.....£99 18-105 F3.5/5.6 AFS G no box.....£179 18-140 F3.5/5.6 AFS VR.....£379 18-300 F3.5/6.3 AFS VR.....£548 35 F1.8 AFS G.....£169 40 F2.8 AFS G macro.....£177 55-300 F4.5/5.6 AFS VR.....£268	28 F1.8 AFS.....£494 28-300 F3.5/5.6 AFS VR.....£647 35 F1.4 AFS G.....£1279 35 F1.8 AFS G.....£398 35 F2 AF-D.....£254 50 F1.4 AFS G.....£274 50 F1.8 AFS G.....£155 58 F1.4 AFS G.....£1299 60 F2.8 AFS.....£369 60-200 F2.8 AFS VR.....£1578 70-200 F4 AFS G ED VR.....£899 70-300 F4.5/5.6 AFS VR.....£439 80-400 F4.5/5.6 AFS G VR.....£1649 85 F1.4 AFS G.....£1147 85 F1.8 AFS G.....£338 105 F2.8 AFS VR macro.....£619 200 F2 AFS ED VR.....£4099 200-500 F5.6 AFS E ED VR.....£1149 300 F2.8 AFS ED VR.....£3489 300 F4 AFS E PF ED VR.....£1497 400 F2.8 G E FL ED VR.....£8199 500 F4 E AFS FL ED VR.....£7989 600 F4 E AFS FL ED VR.....£9648 R1C1 CDR.....£489 TC14EIII converter.....£428 TC17EII converter.....£289 TC20EIII converter.....£328
<b>Nikon D500</b> APS-C Body only <b>£1729</b> Plus 16-80 VR.....£2479 PRE-ORDER Due March	<b>Nikon D7200</b> APS-C Body only <b>£739</b> Plus 18-105 VR.....£885 MBD-15 Grip.....£228	<b>Nikon D5500</b> APS-C Body only <b>£489</b> Plus 18-55 VR.....£555 Plus 18-140 VR.....£699		
<b>Nikon D4s</b> Full Frame Body only <b>£3799</b> EX DEMONSTRATION	<b>Nikon D610</b> Full Frame Body only <b>£949</b>	<b>Nikon P900</b> Bridge Camera <b>£447</b>		

**SIGMA**

10-20 F3.5 EX DC HSM.....£329  
 10-20 F4/5.6 EX DC HSM  
 CAF only.....£249  
 18-300 F3.5/6.3 DC OS mac.....£349  
 24 F1.4 DG HSM Art.....£599  
 24-35 F2 DG HSM Art.....£699  
 35 F1.4 DG HSM Art.....£599  
 50 F1.4 EX DG HSM Art.....£579  
 120-300 F2.8 DG OS Sport.....£2499  
 150-600 F5/6.3 OS Contemp.....£739  
 150-600 F5/6.3 OS Sport.....£1199  
 More Sigma on website

**FUJIFILM X SYSTEM**

**NEW X-Pro 2**  
 X-Pro 2 body.....£1349  
 X-T1 body Graphite.....£997  
 X-T1 blk + 18-135mm.....£1098  
 X-T1 blk + 18-55mm.....£1048  
 X-T1 body Black.....£799  
 X-T10 blk/silv + 18-55mm.....£723  
 X-T10 body Black/silver.....£448  
 X-E2S + 18-55mm.....£749  
 X-E2S body.....£549  
 10-24mm F4 XF.....£679  
 14mm F2.8 XF.....£647

**NEW X-E2S**  
 16mm F1.4 XF.....£685  
 16-55mm F2.8.....£698  
 18mm F2 XF.....£349  
 18-55mm F2.8/4 OIS no box.....£349  
 18-135mm F3.5/5.6 XF.....£549  
 23mm F1.4 XF.....£599  
 27mm F2.8 XF.....£289  
 35mm F1.4 XF.....£366  
 35mm F2 R XF.....£298  
 50-140mm F2.8 R OIS.....£1029

**NEW X70**  
 55-200mm F3.5/4.8 OIS XF.....£466  
 56mm F1.2 R APD.....£897  
 56mm F1.2 XF.....£679  
 60mm F2.4 XF.....£404  
 90 F2 R LM WR.....£615  
 90-100 F4/5.6 WR.....£1399  
 1.4x XF TC WR.....£328  
 X100T Black/Silver.....£795  
 X70 Black/Silver.....£549  
 X30 Black/Silver.....£283

**TAMRON**

16-300 f3.5/6.3 Di II VC PZD.....£379

150-600 f5/6.3 SP VC USD.....£747

18-200 f3.5/6.3 Di II VC.....£169

28-300 f3.5/6.3 Di VC USD CAF/NAF/Sony.....£419

**Kenko Converters**  
 1.4x or 2x Pro 300 ea.....£149  
 Auto ext tube set.....£99



Although we are the best stocked dealer in the West Country, we cannot always have every item listed in stock at all times, so we are happy to reserve new & used items for customers planning to visit. Prices correct 26/01/2016 but subject to change without notice. See website for up to date prices. E&OE.

Website altered daily inc. manufacturers cashback & promotions

**www.mifsuds.com**  
Subscribe to our newsletter - email your address to [info@mifsuds.com](mailto:info@mifsuds.com).

**QUALITY USED EQUIPMENT. See website for full list. Call us to check condition. 6 Month warranty on most secondhand.**

**Used Canon**  
EOS 1D MKIV body  
**£1399/1799**

**Used Canon**  
24mm f1.4 LII M-box  
**£899**

**Used Canon**  
24-70mm f2.8 LII M-box  
**£1199**

**Used Canon**  
85mm f1.2 LI USM  
**£899**

**Used Canon**  
100-400mm f4.5/5.6 L IS USM  
**£699/899**

**Used Canon**  
300mm f2.8 LII IS USM  
**£3999**

**Used Canon**  
300mm f2.8 L IS USM  
**£2999**

**Used Canon**  
300mm f4 L IS USM box  
**£699**

**Used Canon**  
400mm f2.8 L IS USM  
**£3799/3999**

**Used Canon**  
400mm f4 DOII mint unused  
**£5999**

**Used Canon**  
500mm f4 L IS USM  
**£3499/4199**

**Used Sigma**  
300-800mm f5.6 EX DG CAF Fit  
**£2799**

**Used Canon**  
EOS 5D MKIII body box  
**£1499/1699**

**Used Canon**  
EOS 5D MKIII body box  
**£1499/1699**

**Used Canon**  
EOS 5D MKIII body box  
**£1499/1699**

**Used Canon**  
EOS 5D MKIII body box  
**£1499/1699**

**Used Canon**  
EOS 5D MKIII body box  
**£1499/1699**

**Used Canon**  
EOS 5D MKIII body box  
**£1499/1699**

**Used Canon**  
EOS 5D MKIII body box  
**£1499/1699**

**Used Canon**  
EOS 5D MKIII body box  
**£1499/1699**

**Used Canon**  
EOS 5D MKIII body box  
**£1499/1699**

**Used Canon**  
EOS 5D MKIII body box  
**£1499/1699**

**Used Sony**  
A7 RII body box  
**£2099**

**Used Rolleiflex**  
2.8F TLR  
**EPOA**

**Used Nikon**  
D4 body box  
**£2499**

**Used Nikon**  
D3s body box  
**£1799**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Sony**  
FE 35mm f1.4 ZA M-box  
**£999**

**Used Nikon**  
D4 body box  
**£2499**

**Used Nikon**  
D3s body box  
**£1799**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Hasselblad**  
40mm f4 FLE  
**£1199**

**Used Nikon**  
D3s body box  
**£1799**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Leica**  
35mm f2 M39 M-box  
**£1999**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Leica**  
50mm f1.4 M-box  
**£1999**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
D3 body box  
**£999/1299**

**Used Nikon**  
D750 body box  
**£1199**

**Used Nikon**  
500mm f4 AFS VR  
**£2699/2999**

**Used Nikon**  
D800 body box  
**£999/1199**

**Used Nikon**  
14-24mm f2.8 AFS  
**£999**

**Used Nikon**  
24mm f1.4 AFS M-box  
**£899**

**Used Nikon**  
80-400mm f4.5/5.6 AFS  
**£1299**

**Used Nikon**  
85mm f1.4 AFS M-box  
**£999**

**Used Nikon**  
200mm f2 AFS VR  
**£2499**

**Used Nikon**  
200-400mm f4 AFS VR  
**£2999**

**Used Nikon**  
300mm f2.8 AFS VR  
**£2699**

**Used Nikon**  
300mm f2.8 AFS VR  
**£2699**

**Used Nikon**  
300mm f2.8 AFS VR  
**£2699**

**Used Nikon**  
500mm f4 AFS VR  
**£2699/2999**



## 7 ways to improve your photography for free

No money? No problem! Here are seven ways to take better photos and improve your output that won't cost you a penny.

### 1 Find a new location

This is the simplest and most obvious thing that many photographers still seem to miss. Next time you head out to take pictures, head somewhere completely new. It doesn't have to be scenic – close your eyes and stab a map with a pin if you want, then see what you can make. There is no place on Earth where it is completely impossible to take good pictures, so get out there and find them.

### 2 Go back to compositional basics

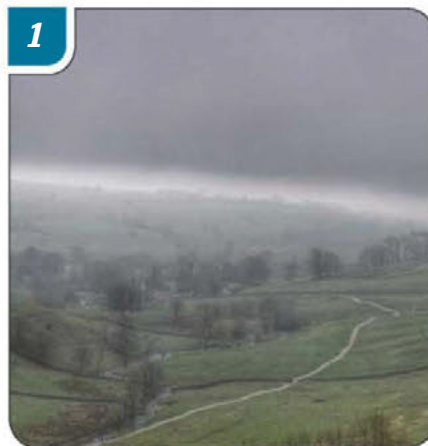
If you're in a bit of a rut and your pictures just don't seem to be coming out right, returning to the basics can be a good way to refresh yourself on the simple art of composing a photo. Next time you head out, do the following three things – take a photo that uses lead-in lines, take a photo that follows the rule of thirds, and take a photo that adheres to the golden ratio. You don't have to do it all the time, but reminding yourself of these simple rules is a great way to remind yourself how to take pictures that work.

### 3 Join a community

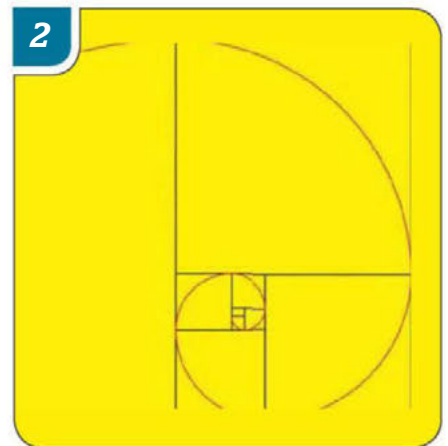
Online or in person, it doesn't matter – often the fastest way to improve your work is to get feedback from others. Seek out your local camera club, search for communities on Facebook or Twitter, call up a few friends who take pictures and arrange a group outing. Set a pact with each other to give honest feedback, and stick to it. Whichever way you do it, you'll find the collaborative experience to be enriching and invigorating.

### 4 Visit exhibitions

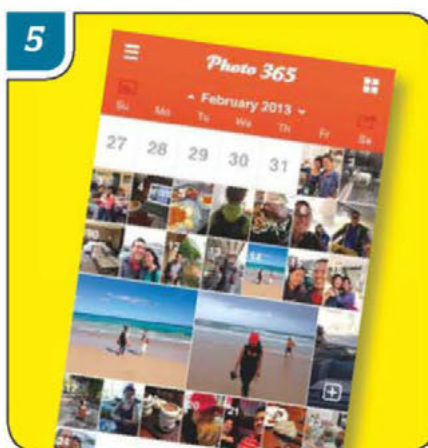
Our country's galleries and art spaces are a fantastic, underappreciated and generally free resource, so make use of them. Find a photography exhibition local to you and head along. Make notes of what you like about the pictures you see, and what you don't. See if you can spot any particular techniques that impress you and plan a way to try them out for yourself.



©BROO\_AM (CANDY B)/FLICKR



©MATTHEW G (STREETMATT)/FLICKR



### 5 Take on a challenge

There are many great challenges online that can help push you out of the door and into the shoot. Photo-a-day and photo-a-week challenges are plentiful online and are a great way to get yourself out taking pictures on a regular basis. If you want a short-term solution there are plenty of 30-day challenges, which suggest a different theme for each day of a month. Don't worry if some of them are out of your comfort zone – that's the idea! Get creative. If you're into smartphone photography there are apps that can help prompt you to take a photo every day, such as Photo 365.

### 6 Go old school

Digital cameras have made many aspects of photography much easier than they used to be, and while this is incredibly convenient it can sometimes be a bit overwhelming creatively. Next time you go out, set yourself an old-school challenge. Imagine you're using a 24-shot roll of film – you've only got 24 exposures to capture this location, so make each one count rather than clicking away and producing hundreds of shots. Alternatively, set your focusing and exposure to manual for a tactile experience, and focus on getting the shot exactly right when the shutter clicks.

### 7 Enter competitions

You know what the secret is to producing something creative? A deadline. So make a commitment to enter the many photography competitions that are held throughout the year. Put the deadline dates in your calendar and stick to them. If you can find regular competitions that will be held every month or even every week, all the better. Some of these do cost money, but many don't, so look around and sign up!



©MICHAEL 'NICK' NICHOLS





# Latest offers and new products!

## OLYMPUS pen-F

The stylish Olympus PEN-F is the most powerful PEN to date, with a new Creative Dial for advanced filter options. Its 20.3MP sensor, and category-leading 5-axis image stabilisation and response time ensure capturing stunning images is easier than ever. Olympus have taken great care to ensure the PEN-F leads the way in terms of beautiful craftsmanship and is sure to be a collector's item of the future. The best of contemporary and retro styles have been combined, using high-quality luxurious materials to create a timeless and stylish design.

Visit our website to watch our first look video featuring the Olympus PEN-F

80  
YEARS  
OLYMPUS  
CAMERAS



Pre-order to receive one of the first in the UK!

Body only +14-42mm EZ +17mm f/1.8  
**£999.00** **£1,099.00** **£1,199.00**

**NEW**  
Expected  
late Feb!

### Olympus OM-D E-M10 + 14-150mm II



**In stock at £599.00**

Add a spare Olympus BL-50 battery for only £49.99  
 Add an Olympus EE-1 dot sight for only £99.99

### Olympus OM-D E-M1 + 12-40mm



**In stock at £1,359.00**

Add a spare Olympus BLN-1 battery for only £54.95  
 Add an Olympus HLD-7 battery grip for only £179.00

### Olympus 300mm

f/4.0 IS PRO M.ZUIKO DIGITAL ED

Olympus has extended its professional M.ZUIKO PRO line-up with the world's most compact, versatile and stable telephoto lens.



SRP  
£2,199.99

**NEW**  
& coming  
soon!

Pre-orders taken now to receive one of the first available lenses in the UK!

## Canon EOS 7D Mark II

Built for those with a love of speed. Be the first to capture the extraordinary, and grab the moments that other photographers miss. Whether it's stills or movies, express your creative side like never before.



Body only +24-70mm L II USM +100-400mm L IS II  
**£1,179.00** **£2,559.00** **£2,938.00**

**24 months  
0% finance**

Instant finance available! Call us on 01444 23 70 65,  
 visit us in store or go online for details.  
 Minimum deposit 10%. Conditions apply.

### Canon EOS 70D Body Only



**In stock at £679.00**

Add a Canon LP-E6N spare battery for only £69.00  
 Add a Canon BG-E14 battery grip for only £149.00

### Canon EOS 5Ds Body Only



**In stock at £2,699.00**

Add a Canon LP-E6N spare battery for only £69.00  
 Add a Canon BG-E11 battery grip for only £225.00

See website for  
256GB of memory  
for FREE!

### Canon G5 X Premium compact



**In stock at £579.00**

Add a Canon NB-13L spare battery for only £44.00  
 Add a Canon DCC-1850 camera jacket for £39.99

### Canon G1 X Mark II Premium compact



**In stock at £464.00**

Add a Canon NB-10L spare battery for only £49.95  
 Add a Canon SC-DC75 soft case for £84.00

### Sony HX90V Upgrade your view



**In stock at £309.00**

Add a Sony NP-BX1 spare battery for only £39.99  
 Add a Sony LCJ-HWA jacket case for £39.99

### Manfrotto LUIE PLAY LED Light



**In stock at £44.00**

For even more lighting options from Manfrotto, visit  
 us in store, call 01444 23 70 60 or see our website.

### Sigma 10-20mm f/3.5 EX DC HSM

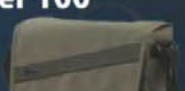


Available in Canon,  
 Nikon, Pentax, Sigma  
 and Sony fits

**In stock at £329.00**

Add a Sigma 82mm WR UV filter for only £29.99

### Lowepro Event Messenger 100



**In stock at £27.99**

Visit our stores in Central London or Burgess Hill (West  
 Sussex) and try out the range of bags for yourself!

# PARKCameras



York Road  
**BURGESS HILL**  
 RH15 9TT

**Tel: 01444 23 70 65**  
**www.parkcameras.com/wdc**

53-54 Rathbone Place  
**LONDON**  
 W1T 1JR



FUJIFILM



"THIS NEW X-PRO2 CAMERA  
BRINGS THE ORIGINAL X-SERIES  
CONCEPT BANG UP TO DATE,  
AND I'M IMPRESSED"

DAMIEN LOVEGROVE, X-PHOTOGRAPHER



**X-Pro2**

CAMERA: X-PRO2 LENS: XF90MM EXPOSURE: 1/125SEC AT F2.0, ISO 400

#XPRO2 #5YEARSOFXSERIES [WWW.FUJIFILM.EU/UK/X-PRO2](http://WWW.FUJIFILM.EU/UK/X-PRO2)